

SET 2698

ZENITH MODELS
D0920A/D/K/U, D0930S, SD0921A/S


Model SD0921A

SAFETY PRECAUTIONS

See Page 1.

ZENITH MODELS
D0920A/D/K/U, D0930S, SD0921A/S

SET 2698

FOLDER 2

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SAFETY PRECAUTIONS

SERVICE WARNING

Service work should be performed only by qualified service technicians who are familiar with safety checks and guidelines.

1. For continued safety, no modification of any circuit should be attempted unless recommended by manufacturer.
2. Disconnect power source before replacing parts as some parts may be electrostatic sensitive.
3. Use an isolation transformer between the line cord and power receptacle, when servicing chassis.

SERVICING HIGH VOLTAGE AND PICTURE TUBE

When servicing the High Voltage circuits, extreme caution should be used.

1. Discharge static High Voltage by connecting a 10 kohms resistor in series with a test lead between chassis and anode lead of picture tube.
2. Wear shatter-proof eye protection (goggles) when handling the picture tube in case of implosion.
3. DO NOT lift picture tube by the neck.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Service personnel should be aware of the procedures and instructions covering x-ray radiation. The only potential source of x-ray in present day solid state receivers and monitors is the picture tube.

1. It is only when High Voltage is excessive that x-ray radiation is capable of being emitted from shell of picture tube. Be sure the High Voltage is set at specified level.
2. An accurate High Voltage meter should be available at all times. Meter calibration should be checked periodically.
3. High Voltage should be kept at rated value - NO HIGHER. Higher voltages may cause x-ray radiation or failure of other associated components. DO NOT depend on protection circuit to keep voltages at rated value.
4. Every time a chassis is serviced, High Voltage should be checked at various brightness levels to be sure it is regulating properly.
5. While troubleshooting a set with excessive High Voltage, avoid being close to picture tube. DO NOT operate longer than it is necessary to locate the cause of excessive High Voltage. Use a variable AC transformer to regulate voltage.
6. Many components, electrical and mechanical, in present chassis have safety related characteristics which are not evident with visual inspection. When these components are known, they are identified with a # on the schematic and in the parts list. When replacing these components, for SAFETY, use only an equivalent replacement part.

SAFETY CHECKS-FIRE AND SHOCK HAZARD

Cold Leakage Checks (Sets with isolated ground.)

1. Unplug the AC cord and connect a jumper across the two prongs on the plug.
2. Turn on power switch.
3. Measure the resistance, with an Ohm meter, between the jumpered AC plug and any exposed metal cabinet parts, on the set such as: antenna screw heads, control shafts, handle brackets. Exposed metal parts that have a return path should measure between 200 kohms and 5 megohm. Parts without a return path must measure infinity.

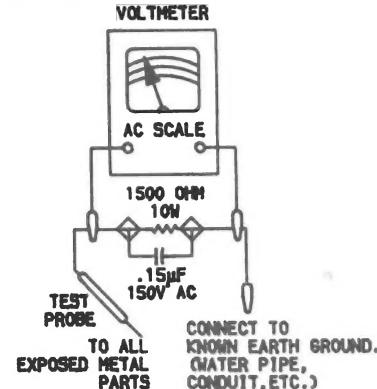
Leakage Current Hot Check

1. Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
2. Connect a 1500 Ohm 10 watt resistor, in parallel with a .15μF 150V AC capacitor, between any exposed metal parts on the set and a good earth ground such as a water pipe. (See Figure below.)
3. Using an AC volt meter, with 1000 Ohms per volt or more sensitivity, measure the voltage across the resistor. Check each exposed part and measure voltage at each point.
4. Reverse the AC plug and repeat voltage measurement at each point.
5. The voltage at any point should not exceed .75 volts RMS. This corresponds to .5 millamps AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected.

GENERAL GUIDE LINES

A final SAFETY check before returning the set to customer.

1. Check area repaired for poorly soldered or de-soldered connections. Check entire circuit board surface for solder splashes.
2. Check interboard wiring for pinched wires or wires contacting any high-wattage resistors.
3. Check that all control knobs, shields, covers, grounds and mounting hardware have been replaced. Be sure to replace all insulators.



TROUBLESHOOTING AID

Note: Waveforms taken with triggered scope, Keyed-Rainbow generator. Schematic voltages measured with digital meter, no signal. Controls adjusted for normal operation.

PICTURE or SOUND

NO PIC, NO SOUND, NO RASTER: Check AC power supply and sources generated from Horizontal Output Transformer (TX3204). Refer to "Troubleshooting" Power Supply and Horizontal circuits.

NO PIC, NO SOUND, HAS RASTER: Check IF-AGC and source voltages from Horizontal Output Transformer (TX3204). Refer to "Troubleshooting" IF-AGC and Horizontal circuits.

NO PIC, HAS SOUND, NO RASTER: Check Horizontal Output Transformer (TX3204) sources and Video circuit. Refer to "Troubleshooting" Horizontal and Video circuits.

NO PIC, HAS SOUND, HAS RASTER: Refer to "Troubleshooting" Video circuit.

HAS PIC, NO SOUND: Refer to "Troubleshooting" Audio circuit.

OVERLOADED PICTURE: Refer to "Troubleshooting" IF-AGC circuit.

LOW OR EXCESSIVE BRIGHTNESS: Check Video and Luminance circuits. Refer to "Troubleshooting" Video circuit.

SWEEP

NO RASTER, HAS SOUND: Check HV rectifier, Part of Horizontal Output Transformer (TX3204). Refer to "Troubleshooting" Horizontal circuit.

NO RASTER, NO SOUND: Refer to "Troubleshooting" Horizontal circuit.

NO VERT DEFLECTION: Refer to "Troubleshooting" Vertical circuit.

POOR VERT LIN OR FOLDOVER: Refer to "Troubleshooting" Vertical circuit.

POOR HORIZ LIN OR FOLDOVER: Refer to "Troubleshooting" Horizontal circuit.

NARROW PICTURE: Refer to "Troubleshooting" Horizontal circuit.

VERT OFF FREQUENCY: Refer to "Troubleshooting" Vertical circuit.

HORIZ OFF FREQUENCY: Refer to "Troubleshooting" Horizontal circuit.

SYNC

NO VERT/HORIZ SYNC: Refer to "Troubleshooting" Sync circuit.

RASTER

YELLOW (NO BLUE): Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

CYAN (NO RED): Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

MAGENTA (NO GREEN): Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

COLOR (B/W operating normally)

NO COLOR: Refer to "Troubleshooting" Chroma circuit.

WEAK COLOR: Refer to "Troubleshooting" Chroma circuit.

NO COLOR SYNC: Refer to "Troubleshooting" Chroma circuit.

NO GREEN: Check Chroma and Green Output circuits. Refer to "Troubleshooting" Raster circuit.

NO BLUE: Check Chroma and Blue Output circuits. Refer to "Troubleshooting" Raster circuit.

NO RED: Check Chroma and Red Output circuits. Refer to "Troubleshooting" Raster circuit.

INCORRECT HUE (TINT): Refer to "Troubleshooting" Chroma circuit.

TROUBLESHOOTING

POWER SUPPLY

Check the AC Fuse (FX3299). If Fuse is open, check Capacitors C3270, C3271, C3272, CX3299, Diodes CRX3271 thru CRX3274 and Thermistor (RX3297). Apply 120VAC, turn set on and check for 151V* at the cathode of Diode CRX3273. If this voltage is missing, check Power Switch (S3201) and Line Filter (TX3298). If 151V* is present at the cathode of Diode CRX3273, check for 123V* at pin 4 of Regulator IC (ICX3202). If this voltage is missing, check ICX3202, Horizontal Output Transistor (QX3208) and associated components. Check for a brief pulse of approximately 60VDC at the cathode of Diode CR3216. If the pulse is missing, check the voltage and components associated with Multivibrator, Start-Up Transistors (Q3210, Q3213 and Q3224). If the pulse is present at the cathode of CR3216 and the voltage at pin 4 of ICX3202 is 171V, refer to the "Horizontal" section of this Troubleshooting guide.

* With respect to Isolated ground.

HORIZONTAL

Inject a horizontal signal at the base of the Horizontal Output Transistor (QX3208), turn set on and remove injected signal if the set operates normally. If the set continues to operate after the injected signal is removed, check the voltages, and components associated with the Start-Up Circuit Transistors (Q3210, Q3213 and Q3224). If the set stops operating after the injected signal is removed, check the voltages, waveforms and components associated with pins 6, 7, 31, 32, 33, 36, 37, 38 and 41 of Video/Chroma/Horizontal/Vertical Processor IC (IC2376) and Horizontal Driver Transistors (Q3206, Q3209 and QX3202). If the set does not operate with a signal injected at the base of the Transistor QX3208, check the voltages, waveforms and components associated with Transistor QX3208 and the Horizontal Output Transformer (TX3204). Check Diodes CR3472, CR3473, CR3473A, CR3487 and associated components for defects. The High Voltage Rectifier is part of Transformer TX3204 and if defective will affect the performance of the horizontal circuits. Horizontal linearity or width problems may be caused by Capacitors CX3228, CX3229 and CX3231 being defective.

IF-AGC

Inject a video IF signal at the IF input and check for a picture on the CRT. If a picture is present, check Tuner, Tuner AFC circuit at pins 23 thru 27, Tuner AGC circuit at pins 11 thru 14 of the IF-AGC IC (IC1201). If a picture is missing, check for video waveform at pin 1 of Plug 1M. If the waveform is present, refer to the "Video" section of this Troubleshooting guide. If waveform is missing, apply AGC bias to pin 13 of IC1201 while monitoring pin 1 of Plug 1M with a scope. If the waveform returns, check the voltages, and components associated with pins 12 and 13 of IC1201. If the waveform does not return, check the voltages, waveforms and components associated with pins 1 thru 9, 16 thru 20, 22 thru 28 of IC1201, Video Emitter Follower Transistor (Q1229). See the AGC Voltage Chart for voltages that change with signal.

NOTE: Voltages taken using a key-rainbow generator signal.

AGC VOLTAGE CHART

IC1201
Pin 11 3.8V
Pin 13 6.48V

AUDIO

Inject a modulated sound IF signal at Test Point C2 and turn the volume to Maximum. If sound is heard at the speaker, refer to the "IF-AGC" section of this Troubleshooting guide. If no sound is heard at the speaker, check the speaker, Plugs 4P4, 4K4 and check the voltages, and components associated with pins 1, 2, 3, 6 thru 11 and 14, 15 and 16 of the Audio Det Amplifier IC (IC1451) and Sound Mute Transistor (Q1455).

VIDEO

Inject a video signal at pin 1 of Plug 1M on Test Point CV and check for video on the CRT. If video is present, refer to the "IF-AGC" section of this Troubleshooting guide. If no video is present on the CRT, check for a video waveform at pins 25, 26 and 27 of Video/Chroma/Horizontal/Vertical Processor IC (IC2376). If there is no video at pins 25, 26 and 27 of IC2376, check the voltages, waveforms and components associated with pins 9, 22 thru 31, 34 and 35 of IC2376. If video is present at pins 25, 26 and 27 of IC2376, check the CRT and the voltages, waveforms and components associated with Output Transistors (Q5100 thru Q5105). If the brightness is inadequate or cannot be controlled, check the voltages and components associated with pins 24, 29 and 30 of IC2376 and pin 8 of the CRT.

VERTICAL

Inject a vertical drive signal at pin 42 of Video/Chroma/Horizontal/Vertical Processor IC (IC2376). If vertical sweep is now present, check the voltages, waveforms and components associated with pins 3, 40 and 42 of IC2376. If there is still no vertical deflection, check the voltages, waveforms and components associated with the Vertical Output IC (IC2100) and the Deflection Yoke. Vertical linearity or height problems may be caused by Electrolytics C2131, C2148, C2149 and C2552 being defective.

SYNC

Check for a video waveform at pin 4 of Video/Chroma/Horizontal/Vertical Processor IC (IC2376). If waveform is missing, check the components associated with pin 4 of IC2376. If a video waveform is present at pin 4 of IC2376, check for the proper vertical waveforms at pins 2, 3, 40 and 42 of IC2376 and horizontal waveforms at pins 32, 37, 38 and 39 of IC2376.

RASTER

Check the CRT and CRT voltages. If there is no red, check the voltages and components associated with pin 26 of Video/Chroma/Horizontal/

TROUBLESHOOTING (Continued)

Vertical Processor IC (IC2376) and Red Drive and Output Transistors (Q5101, Q5104). If there is no green, check the voltages and components associated with pin 25 of IC2376 and Green Drive and Output Transistors (Q5102, Q5105). If there is no blue, check the voltages and components associated with pin 27 of IC2376 and Blue Drive and Output Transistors Q5100, Q5103). If the raster has height or width problems, refer to the "Vertical", "Horizontal" and "Power Supply" sections of this Troubleshooting guide.

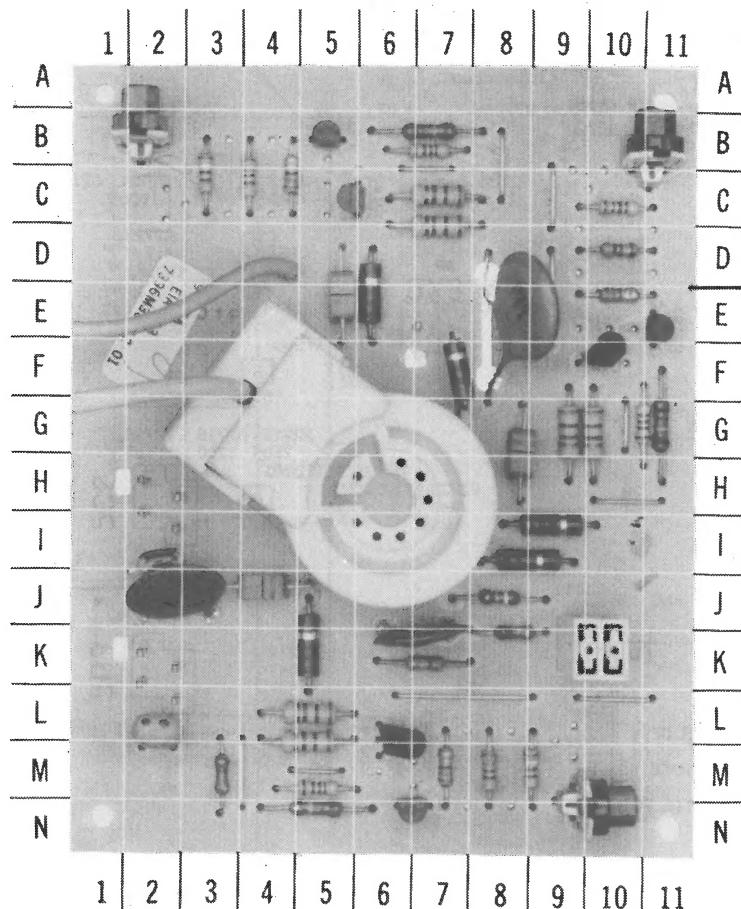
CHROMA

Check for a chroma waveform at pin 10 of Video/Chroma/Horizontal/Vertical Processor IC (IC2376). If waveform is missing, check components associated with pin 10 of IC2376. If

the waveform is present at pin 10 of IC2376, check for the proper chroma waveforms at pins 25, 26 and 27 of IC2376. If the chroma waveforms are missing, check voltages, waveforms and components associated with pins 10 thru 27 of IC2376. Check the voltages, waveforms and components associated with Color Control and pin 11 of IC2376. Check the 3.58MHz oscillator at pins 16 thru 19 of IC2376. If there is no color sync, check the adjustment of the Color Filter Control (R2390) and associated components. If there is inadequate tint range, check the voltages and components associated with the Tint Control and pin 20 of IC2376. If the proper chroma waveforms are present at pins 25, 26 and 27 of IC2376, refer to the "Raster" section of this Troubleshooting guide.

CRT BOARD-GridTrace LOCATION GUIDE

C5100	K-7	L5100	L-2	R5105	C-3	R5120	C-7	R5141	M-3
C5101	I-2	Q5100	N-6	R5109	M-8	R5121	L-5	5A3	K-2
C5103	M-7	Q5101	E-11	R5110	D-10	R5122	G-9	5C2	H-2
C5104	E-10	Q5102	B-5	R5111	C-4	R5123	C-7	5L	K-10
C5105	C-4	Q5103	M-6	R5112	N-10	R5124	K-5	5X3	E-7
C5109	J-2	Q5104	F-10	R5113	B-11	R5125	I-9		
C5110	E-8	Q5105	C-5	R5114	B-2	R5126	E-6		
DAG	D-4	R5100	M-5	R5115	N-5	R5136	F-7		
E5100	J-4	R5101	G-11	R5116	G-11	R5137	K-8		
E5101	H-8	R5102	B-7	R5117	B-7	R5138	J-8		
E5102	E-5	R5103	M-9	R5118	L-5	R5139	K-7		
E5103	E-8	R5104	C-10	R5119	G-10	R5140	I-9		



TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

Equipment	B&K Precision Equipment No.	Sencore Equipment No.	Notes
OSCILLOSCOPE	1541A, 2120, 2125, 2160	SC61	
GENERATORS			
RGB	1249, 1260	RG67	
MULTIBURST SIGNAL	1251, 1260	VA62A	
COLOR BAR	1211A, 1249, 1251, 1260	VA62A, CG25, NT64	
ANALOG VOM	114, 117, 177, 214		
DIGITAL VOM	388HD, 2900 SERIES	DVM37, DVM56A, SC61	
FREQUENCY METER	1803, 1804, 1805	FC71, SC61	
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44 PR-28(HV)	HP200 TP212	
ISOLATION TRANSFORMER	TR110, 1604, 1653, 1655	PR57	
CAPACITANCE ANALYZER	820, 810, 830	LC76, LC101, LC102	
CRT ANALYZER	467, 470, 480, 490	CR70	
TEMPERATURE PROBE	TP-28, TP-30		
AC LEAKAGE TESTER,	1655	PR57	
LOGIC PROBE	DP51, DP21		
LOGIC PULSER	DP101, DP31		
INDUCTANCE ANALYZER	875A	LC76, LC101, LC102	
FLYBACK YOKE TESTER	875A	VA62A, LC76, LC101, LC102	
TV STEREO GENERATOR	2009	ST65, ST66	
TV STEREO POWER MONITOR		SR68	
FIELD STRENGTH METER		FS73, FS74	
TRANSISTOR TESTER		TF46	
VIDEO ANALYZER		VA62A	

TV ALIGNMENT INSTRUCTIONS

Use an Isolation transformer and observe power supply polarity. Maintain line voltage at 120V AC.
Allow a 20-minute warm-up period for receiver and test equipment.

Suggested Alignment Tools:

GO-THORSEN

L1426.....9293, 9294

PRELIMINARY INSTRUCTIONS

Set the channel selector to the highest unused channel. Set scope sweep to external. Connect scope vertical input to scope vertical input on sweep/marker generator. Connect scope external horizontal input to scope horizontal input on sweep/marker generator. Ground test equipment to TV chassis unless specified otherwise. Use only enough generator output to provide a usable indication.

Note: Response may vary slightly from that shown.

Adjust AGC Delay Control (R1231) fully clockwise.

Connect a +6 Volt Bias to AGC-TP.

Set Phase Adjust Control (R1213) to midrange.

Connect a DC meter to Test Point C2. With no signal.

Adjust Zero Carrier Control (R1244) for +7 Volts.

Remove meter.

TV ALIGNMENT INSTRUCTIONS (Continued)
VIDEO IF ALIGNMENT (SWEEP MARKER GENERATOR)

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To Test Point CV	To IF Input J1201	44MHz (10MHz Sweep)	45.00MHz	Adjust Oscillator Coll (L1230) to position oscillator at 45.00MHz marker. See Figure 1.
"	"	"	41.25MHz 42.17MHz 45.00MHz 45.75MHz	Adjust Limiter Coll (L1209) and Phase Adjust Control (R1213) for Maximum 45.75MHz (Maintaining oscillation at 45.00MHz). See Figure 2.
"	"	"	44.00MHz 45.75MHz	Adjust L1204 for Maximum gain and symmetry of response. L1204 and Tuner IF Output Coll affect overall response. Adjust Oscillator Coll (L1230) to place oscillator at 44.00MHz. See Figure 3.

VIDEO IF ALIGNMENT (BAR SWEEP GENERATOR)

BAR SWEEP GENERATOR	SCOPE INPUT	REMARKS
To Antenna Terminals	To Test Point CV	Perform Video IF Adjustments per SWEEP/MARKER GENERATOR Instructions above. See Figure 4.

AUTOMATIC FINE TUNING ALIGNMENT

Connect as explained in preliminary instructions unless specified otherwise.
Place AFC Switch to Normal position.

DIRECT PROBE FROM SWEEP/MARKER GENERATOR	SWEEP GENERATOR OUTPUT	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	REMARKS
To AFC Test Point	To IF Input J1201	44MHz (10MHz Sweep)	41.25MHz 45.75MHz	Adjust L1210 to place 45.75MHz marker as shown. See Figure 5.

ZENITH MODELS
D0920A/D/K/U, D0930S, SD0921A/S

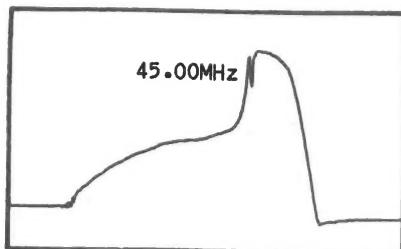


Figure 1

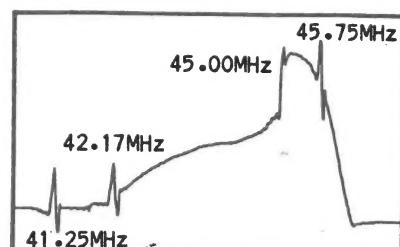


Figure 2

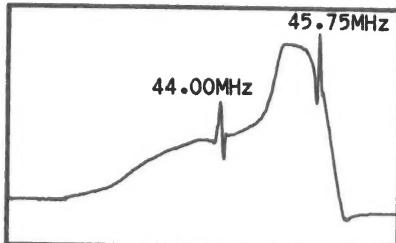


Figure 3

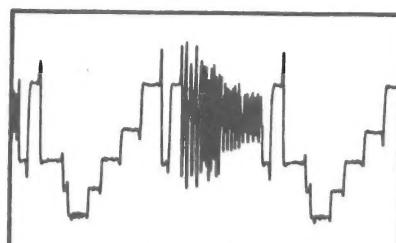


Figure 4

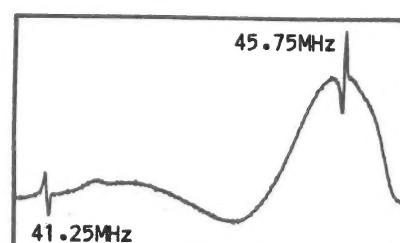
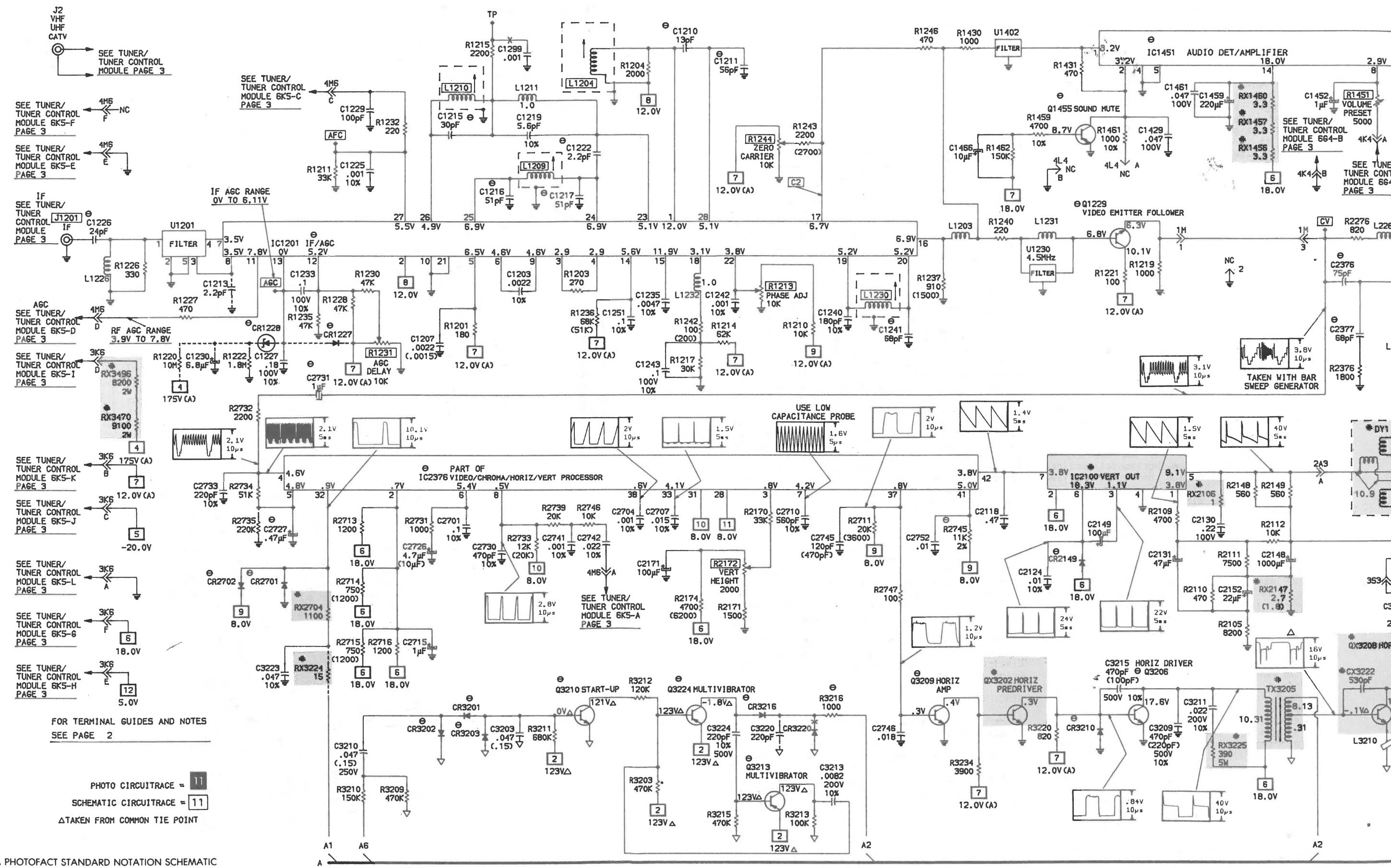
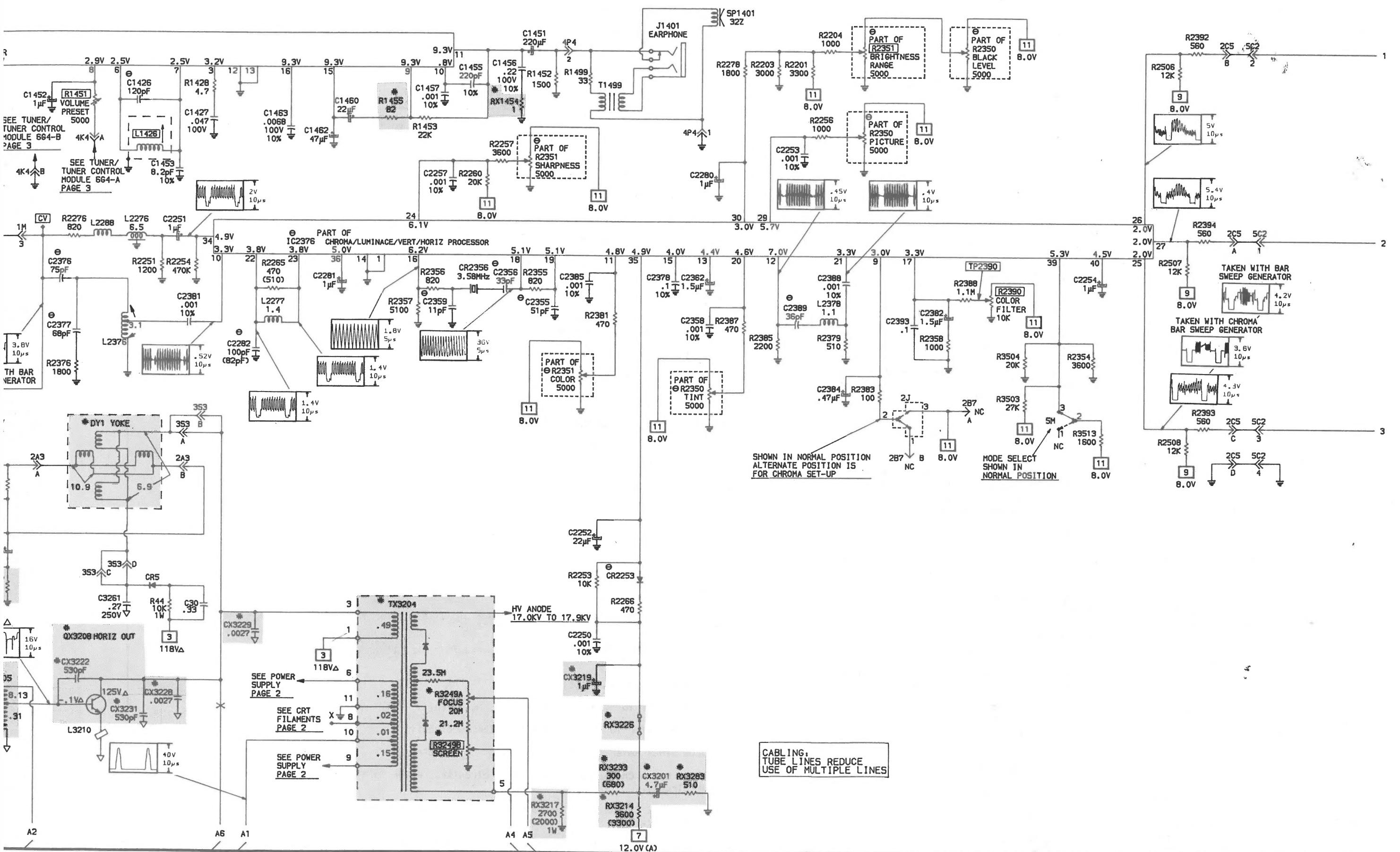
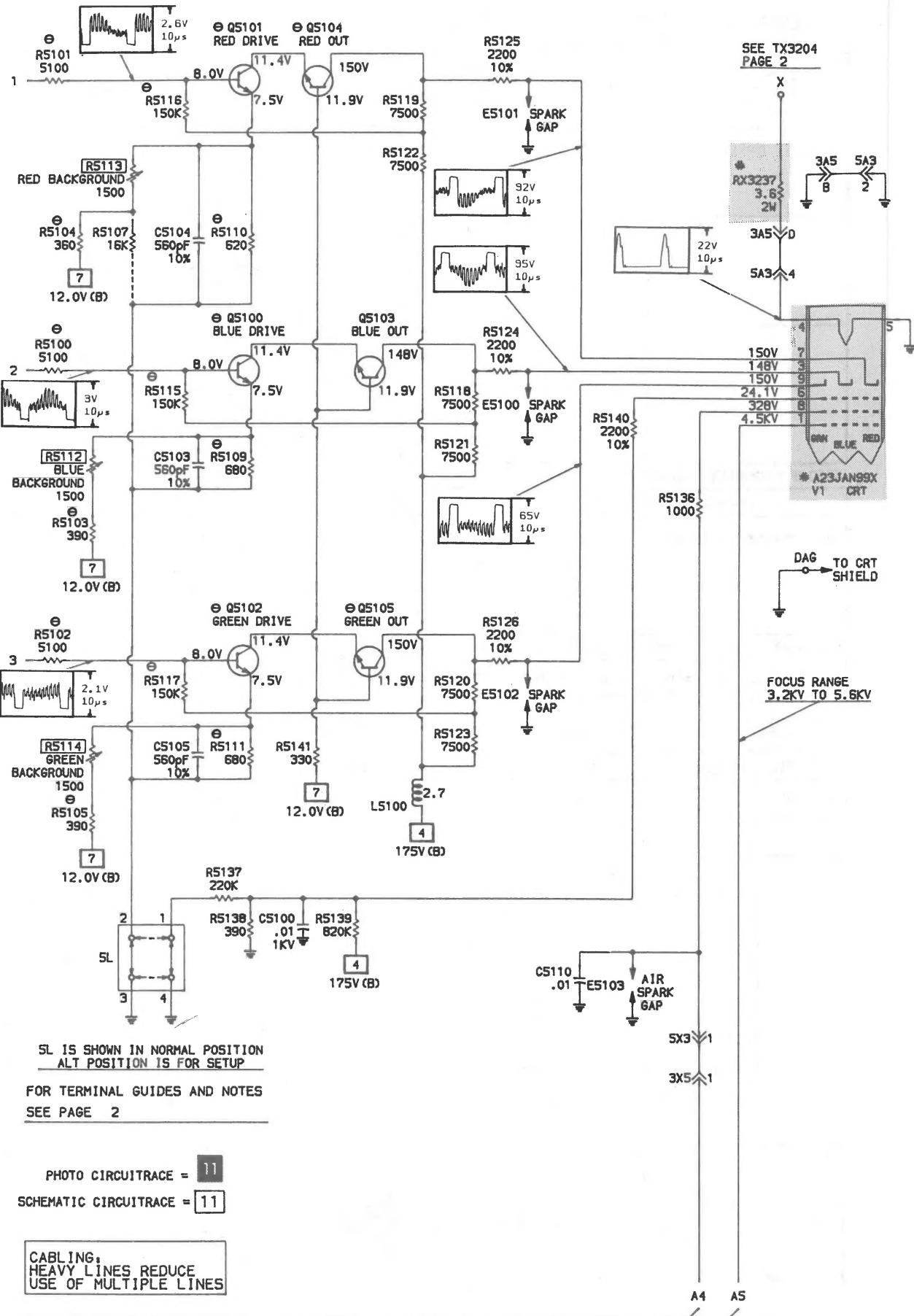


Figure 5





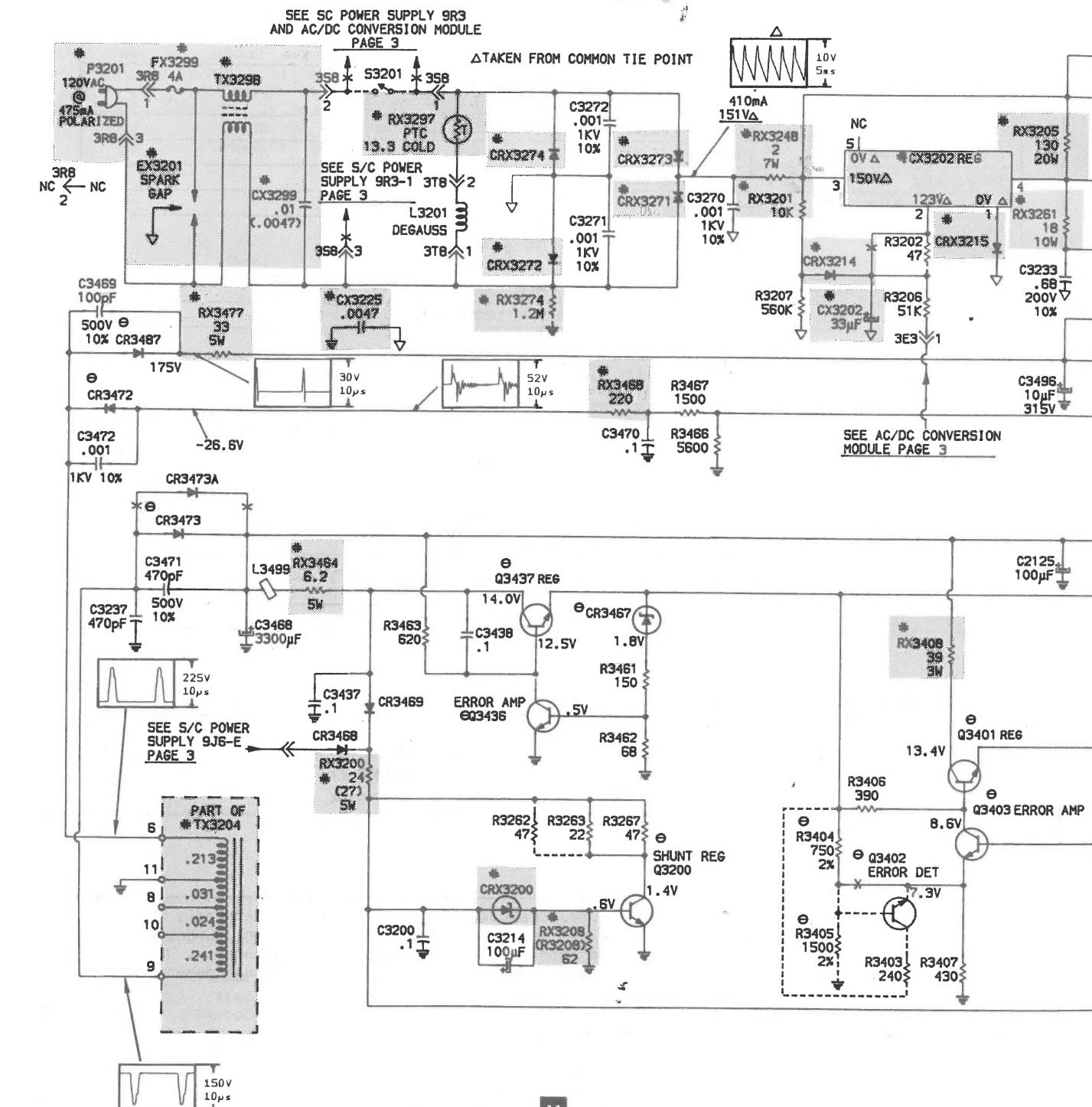


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CRT BOARD



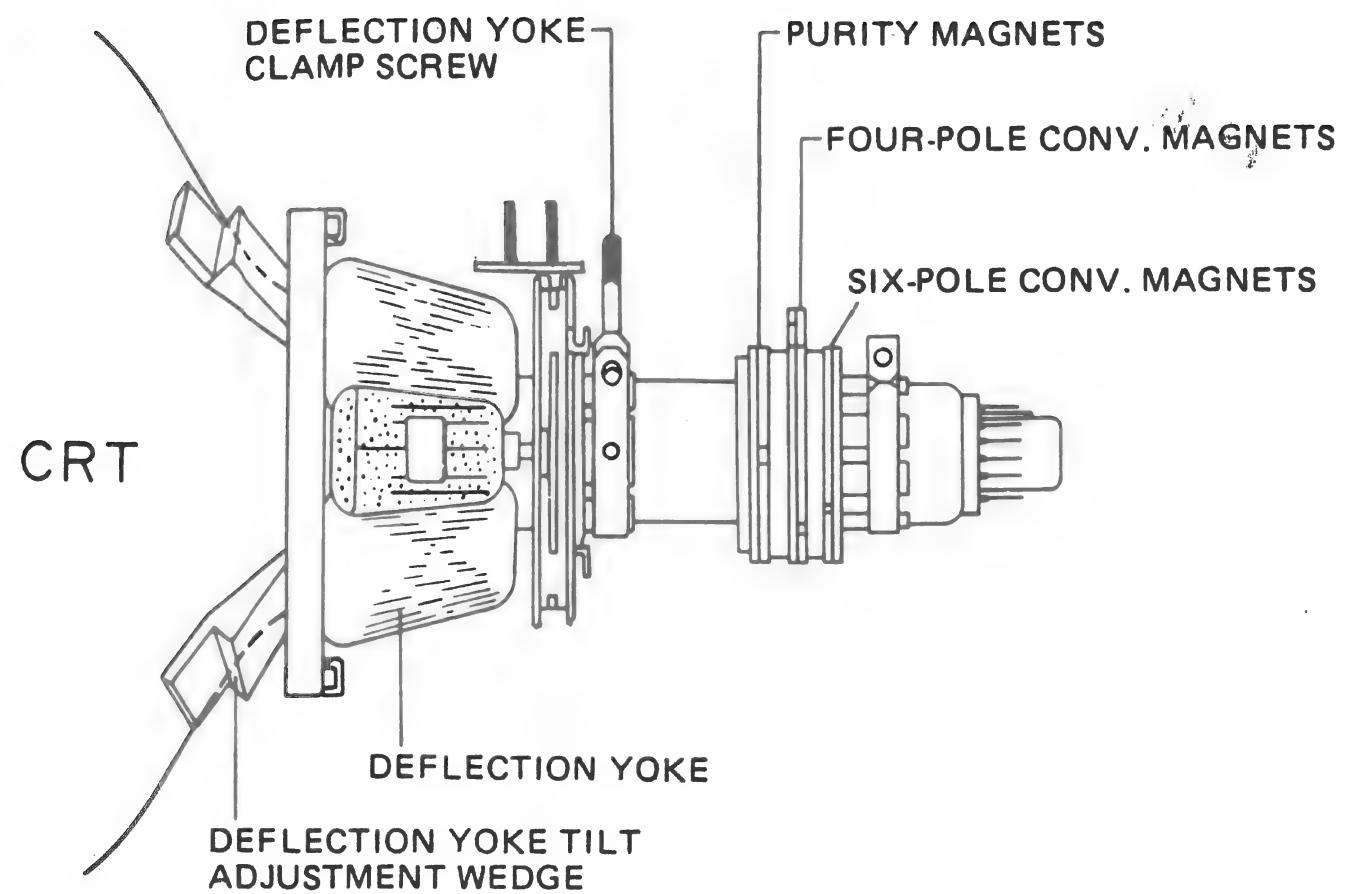
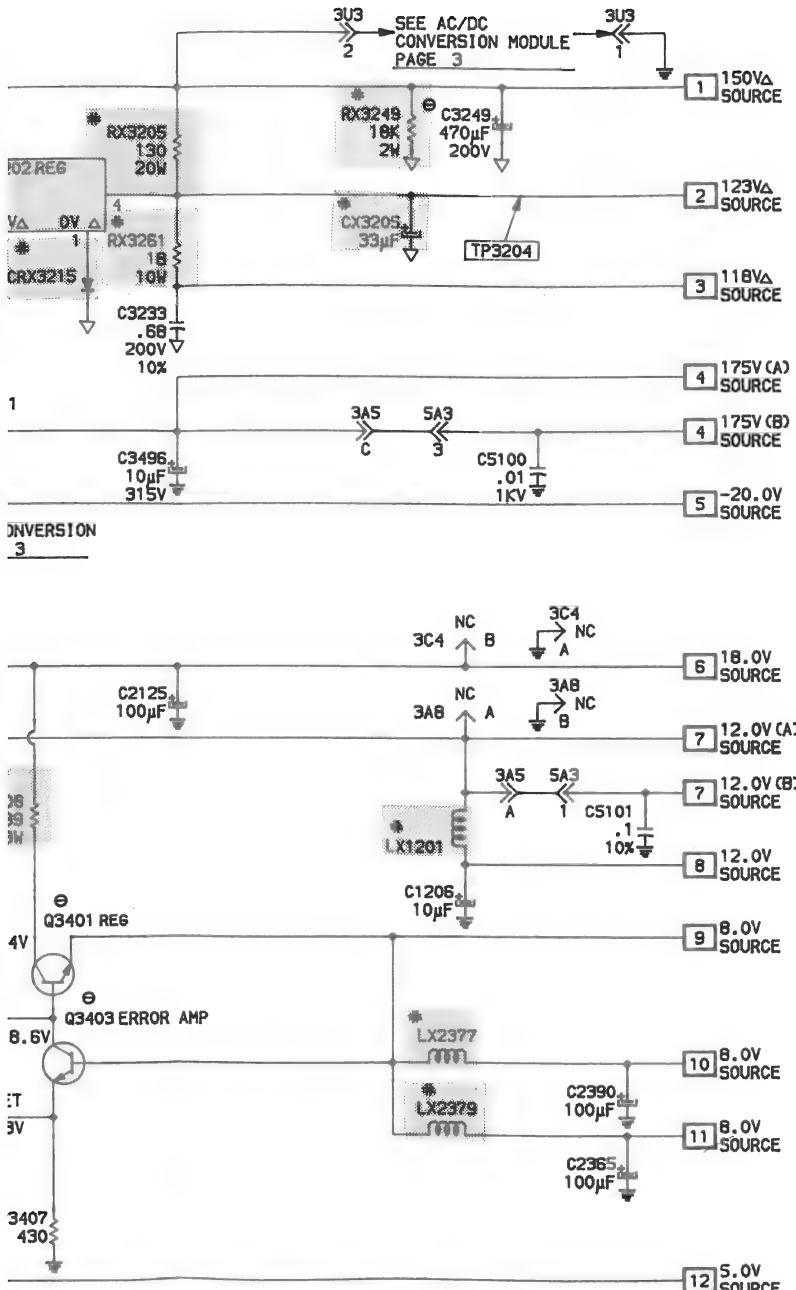
A PHOTOFACT STANDARD NOTATION SCHEMATIC

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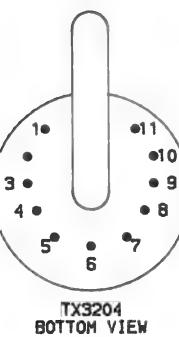
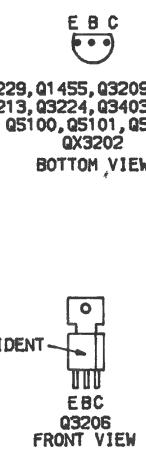
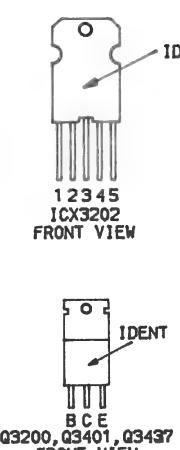
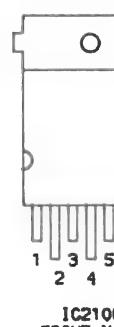
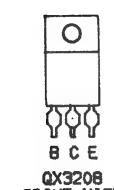
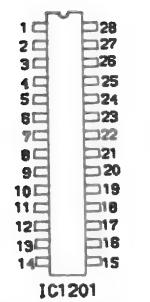
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**ZENITH MODELS
D0920A/D/K/U, D0930S, SD0921A/S**



EBC
Q5103, Q5104, Q5105
BOTTOM VIEW



For SAFETY use only equivalent replacement part, see parts list.

— Circuitry not used in some versions

- - Circuitry used in some versions

• See parts list

* Nominal value

† Ground

■ Chassis

△ Common tie point

Waveforms and voltages are taken from ground, unless noted otherwise.

Supply voltages maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

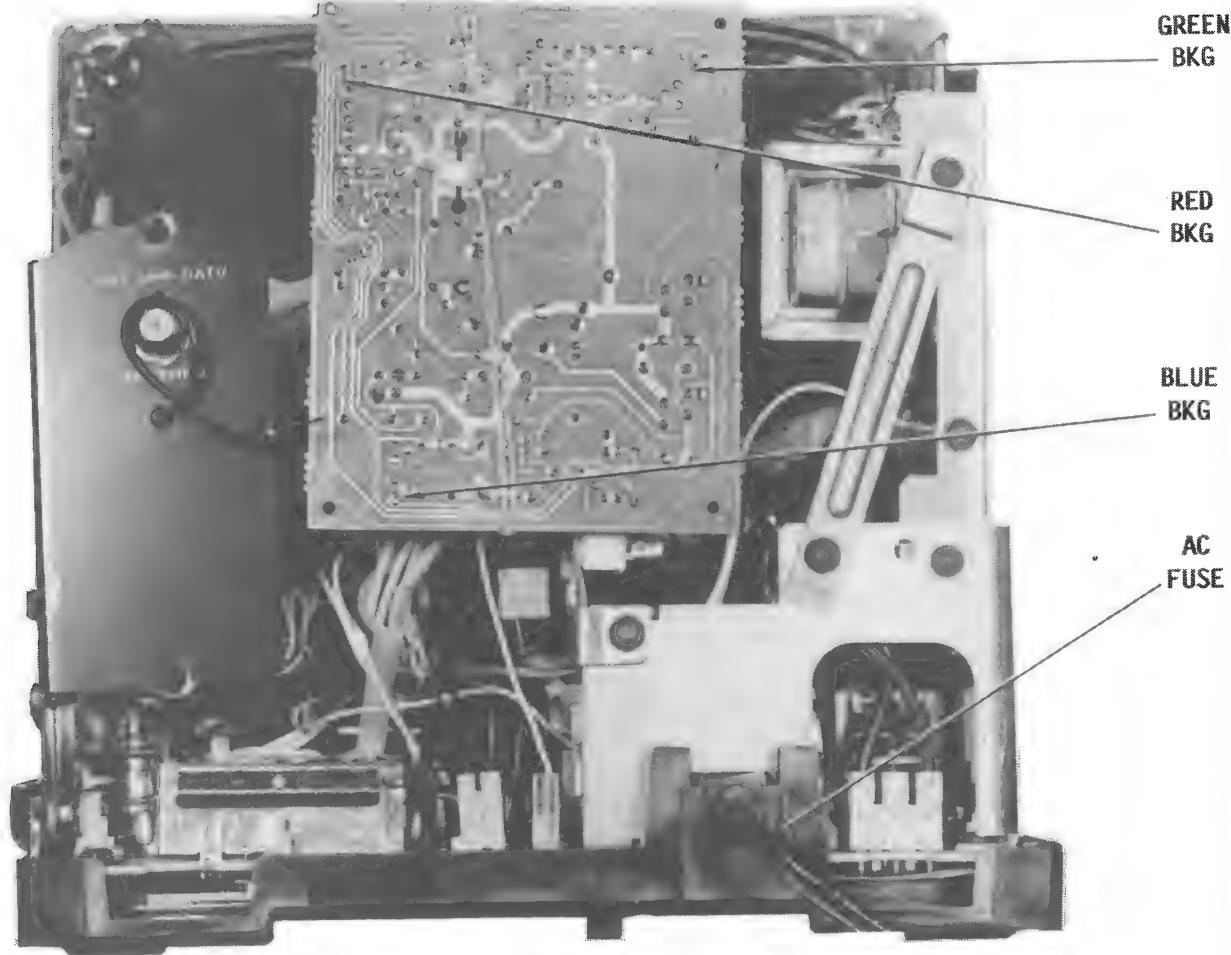
Terminal identification may not be found on unit.

Capacitors are 50 volts or less, 5% unless noted.

Electrolytic capacitors are 50 volts or less, 20% unless noted.

Resistors are 1/2W or less, 5% unless noted.

Value in () used in some versions.



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

Remove six screws holding upper cabinet and remove. Disconnect speaker leads, HV anode, CRT socket, deflection yoke connector, degaussing coil connector, ground leads and all required cabling. Remove three screws holding cabinet front assembly to cabinet bottom and remove assembly from bottom. Remove nine screws holding Main board and tuner assemblies to cabinet bottom and remove assemblies from cabinet. Remove four screws holding Keyboard/Channel Dis-

play board to cabinet front and remove board from cabinet.

CRT REMOVAL

Follow "Chassis Removal" procedure and lay set facedown on a soft protective surface. Loosen and remove CRT neck assemblies. Remove four screws holding CRT to cabinet front and lift CRT out of cabinet. Do not lift CRT by the neck.

SERVICING IN THE FIELD

CRT IMPLOSION PROTECTION AND CLEANING

Implosion protection is an integral part of the picture tube, cleaning accomplished without CRT removal.

FUSE DEVICES

A 4-amp fuse is used for AC protection. (See photo, Cabinet - Rear View.)

CHANNEL READOUT ACCESSIBILITY

Chassis assembly must be removed. See Disassembly Instructions.

CHANNEL TUNING

Channel Up and Down buttons are provided for channel scanning with ten numbered buttons. Enter button provided for one or two-digit direct entry channel selection. Fine tuning is automatic. See Channel Pretuning.

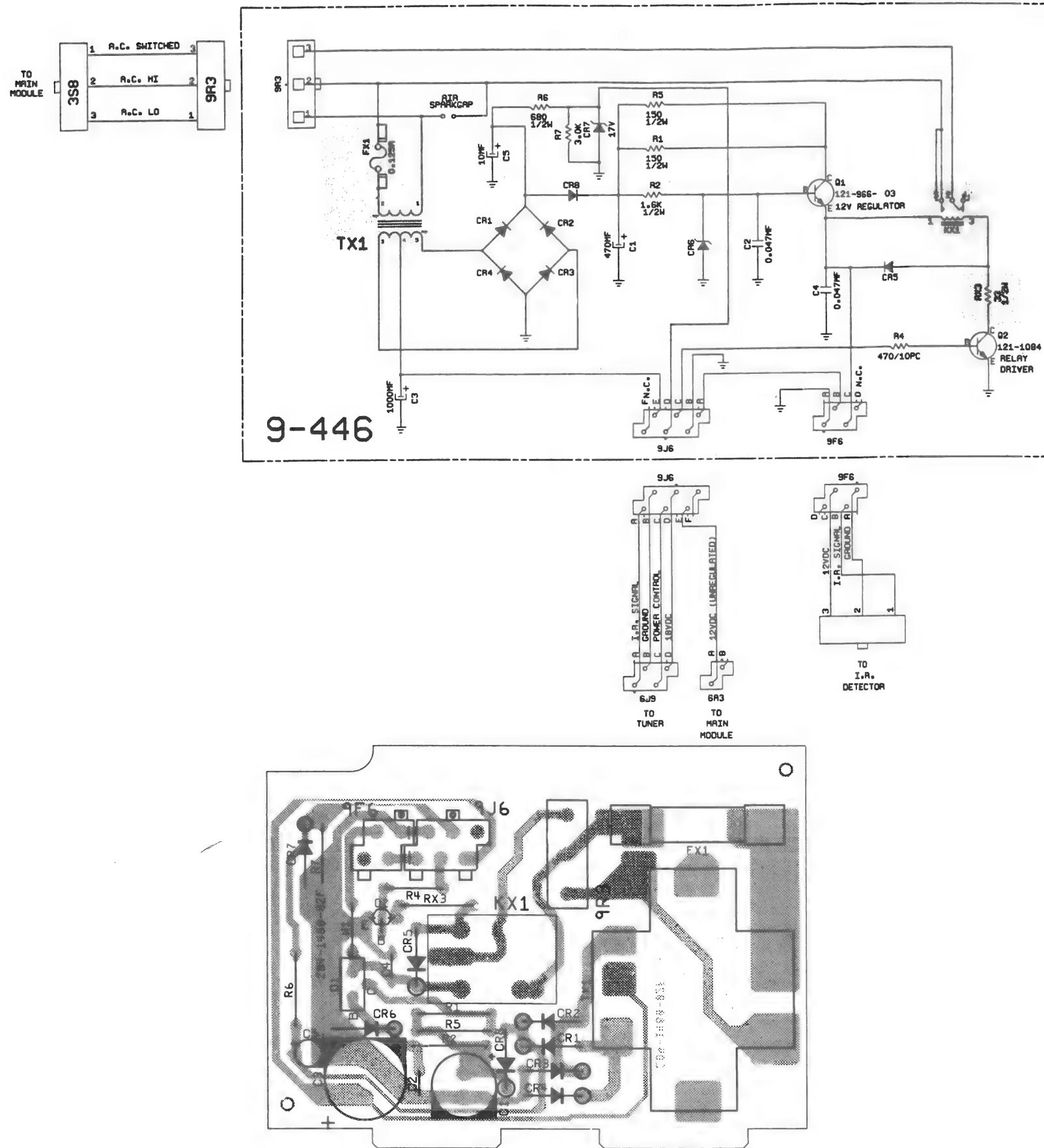
FOCUS

The focus may be varied by a focus control.

AGC

The AGC may be varied by an AGC Delay control. (See photo, Main Board - Top View.)

SCHEMATIC & LEGEND, 9-446 S/C POWER SUPPLY MODULE



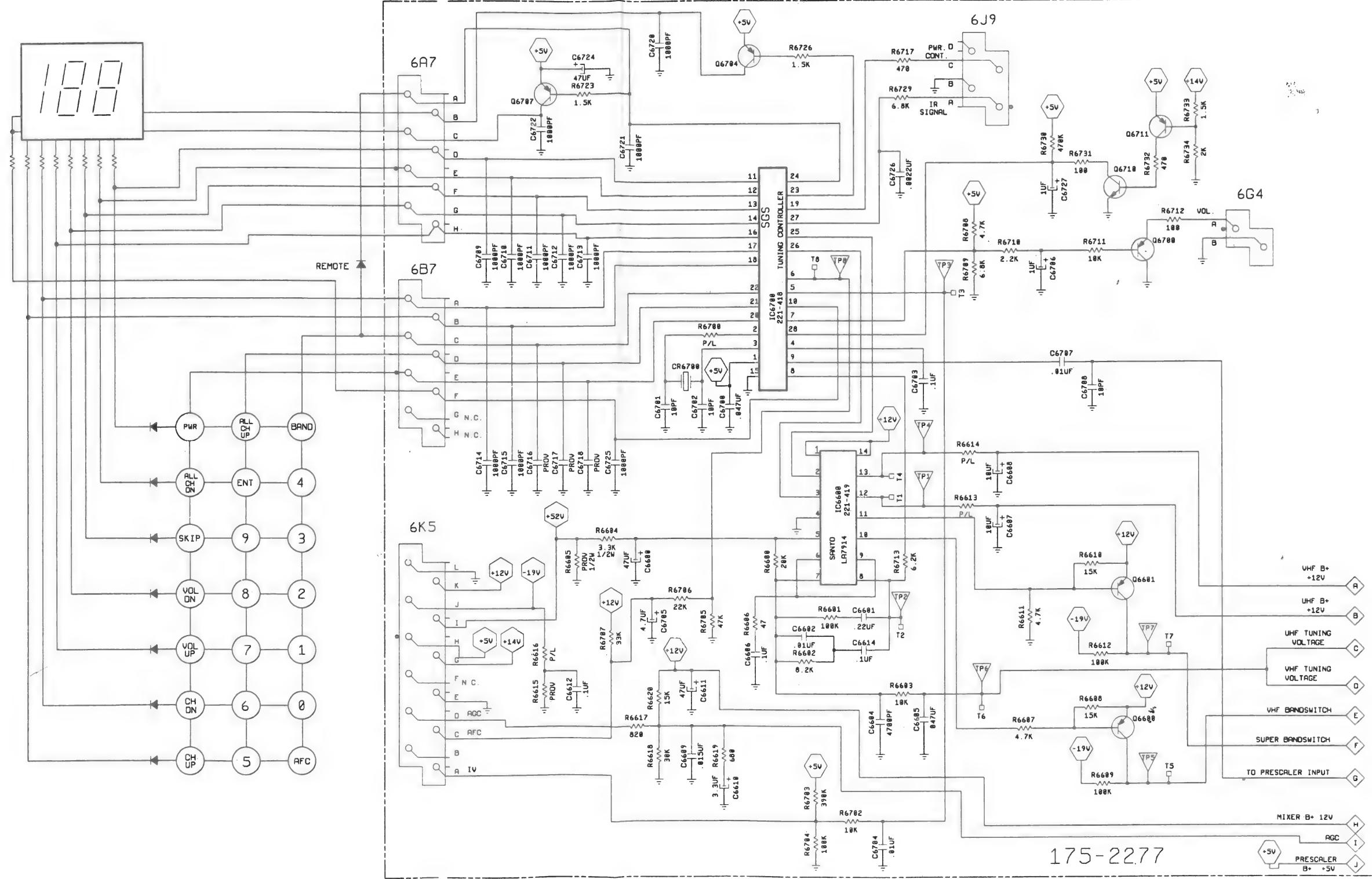
S/C POWER SUPPLY MODULE (9-446)

Courtesy of Manufacturer

S/C POWER SUPPLY MODULE (9-446)

SPACE COMMAND POWER SUPPLY MODULE (9-446)		
REF.NO.	PART NO.	DESCRIPTION
<u>CAPACITORS</u>		
C1	22-7861-12	470 MFD 20% 35V ELECTROLYTIC
C2	22-7775-20	0.047 MFD 20% 100V POLYESTER
C3	22-7860-13	1000 MFD 20% 25V ELECTROLYTIC
C4	22-7775-20	0.047 MFD 20% 100V POLYESTER
C5	22-7862-05	10 MFD 20% 50V ELECTROLYTIC
<u>DIODES</u>		
CR1	103-254-01	LOW VOLTAGE
CR2	103-254-01	LOW VOLTAGE
CR3	103-254-01	LOW VOLTAGE
CR4	103-254-01	LOW VOLTAGE
CR5	103-254-01	LOW VOLTAGE
CR6	103-279-22	13V 0.5W ZENER
CR7	103-279-26	17V 0.5W ZENER
CR8	103-254-01	LOW VOLTAGE
<u>FUSE</u>		
FX1	136-123-03 19-840-02	0.125 AMP 250V TIME DELAY FUSE FUSE HOLDER CLIP
<u>RELAY</u>		
KX1	195-138	RELAY SPST
<u>TRANSISTORS</u>		
Q1	121-966-03	NPN 12V REGULATOR
Q2	121-1084	NPN RELAY DRIVER
<u>RESISTORS</u>		
R1	63-10243-52	150 OHM 5% 1/2W FILM
R2	63-10243-77	1.6K OHM 5% 1/2W FILM
RX3	63-10565-36	33 OHM 5% 1/2W FILM
R4	63-10183-64	470 OHM 10% 1/4W CARBON
R5	63-10243-52	150 OHM 5% 1/2W FILM
R6	63-10243-68	680 OHM 5% 1/2W FILM
R7	63-10235-83	3K OHM 5% 1/4W FILM
<u>TRANSFORMER</u>		
TX1	95-3650	POWER
<u>WIRE</u>		
W1	91-2053	22-GAUGE TINNED
<u>MISCELLANEOUS COMPONENTS</u>		
64-519-01 86-799	ROLLED FLANGE EYELET (5 REQ.) TERMINAL PIN (13 REQ.)	

TUNER AND TUNER CONTROL MODULE SCHEMATIC

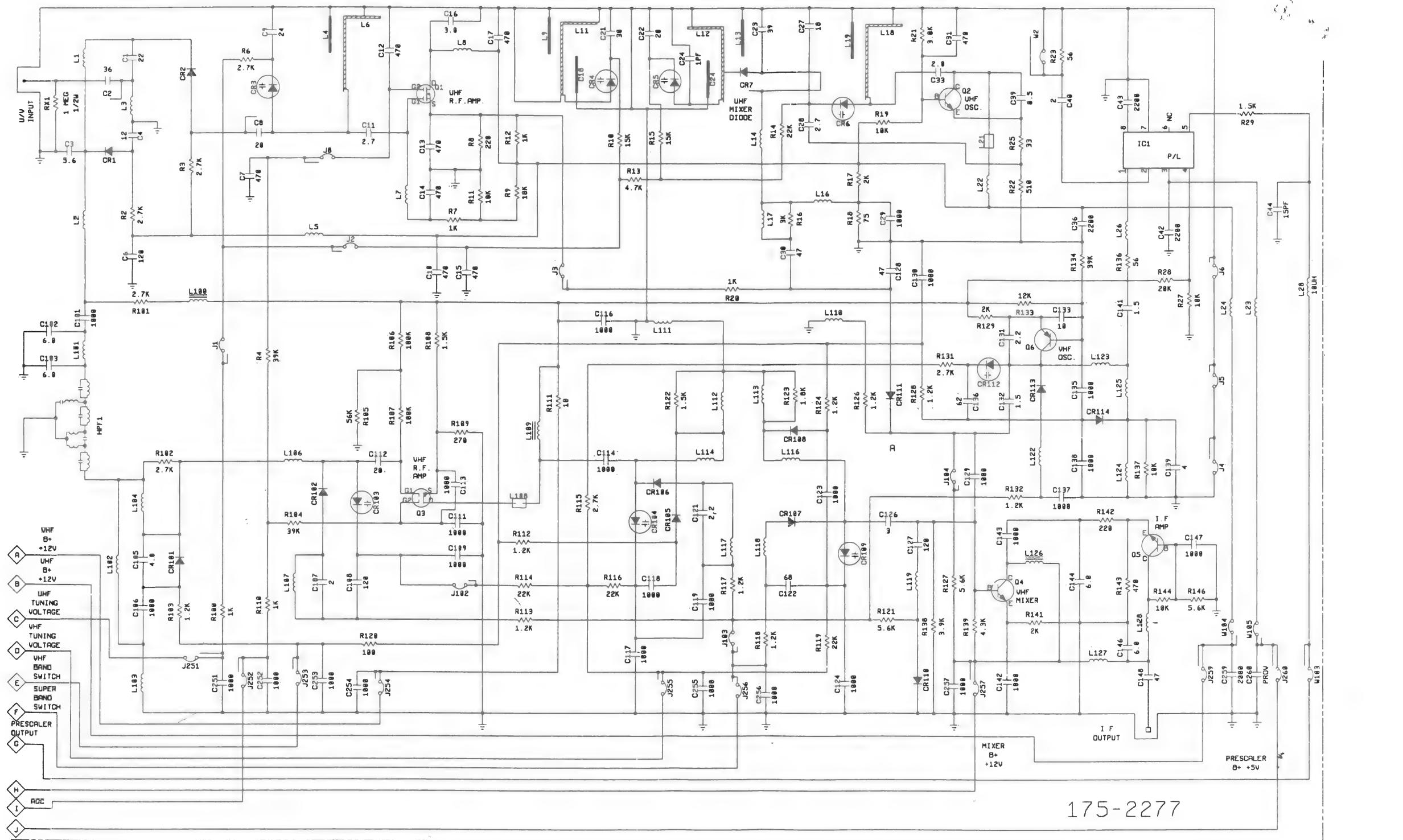


Courtesy of Manufacturer

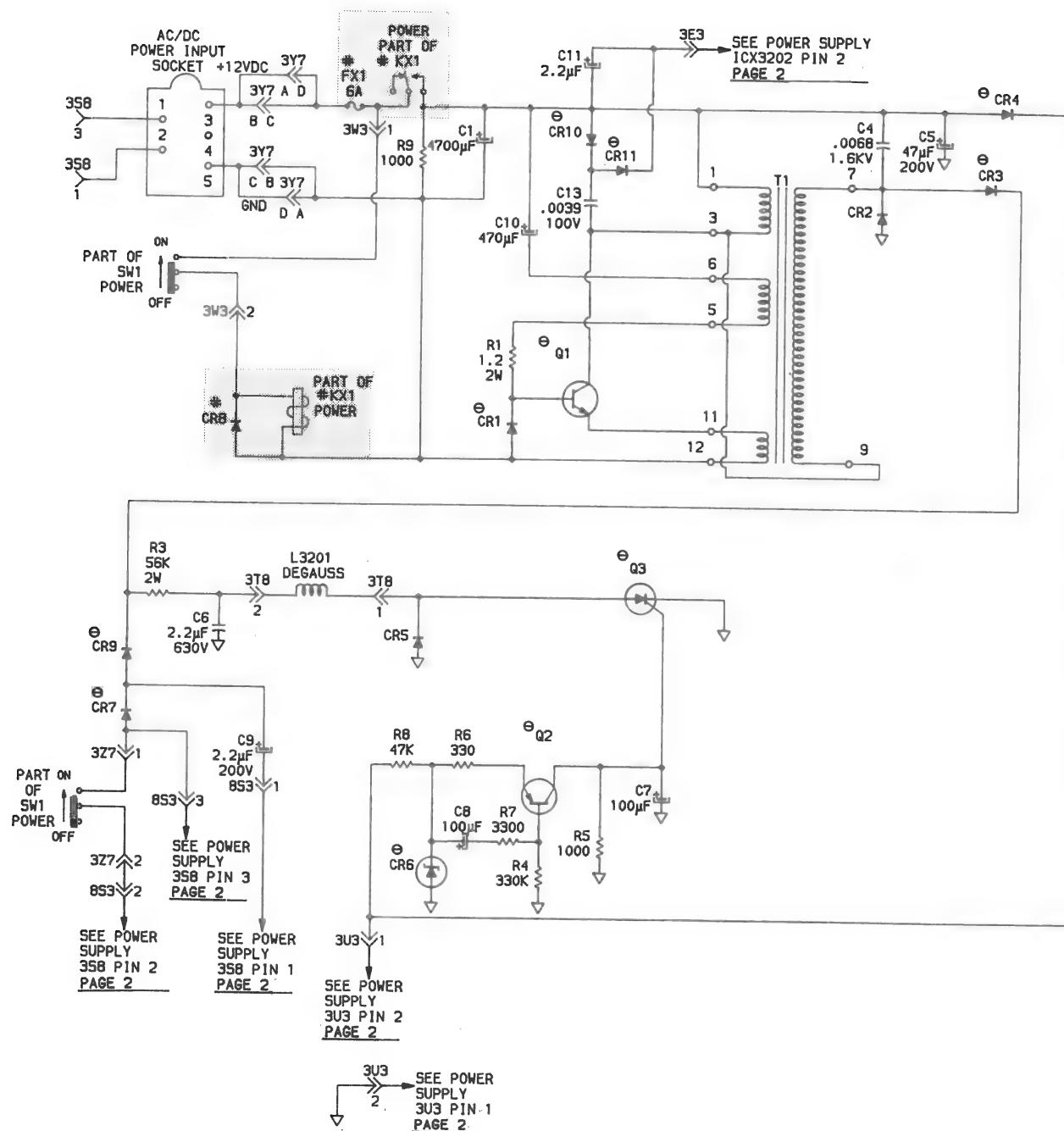
175-2277

TUNER/TUNER CONTROL MODULE

TUNER/TUNER CONTROL MODULE



Courtesy of Manufacturer

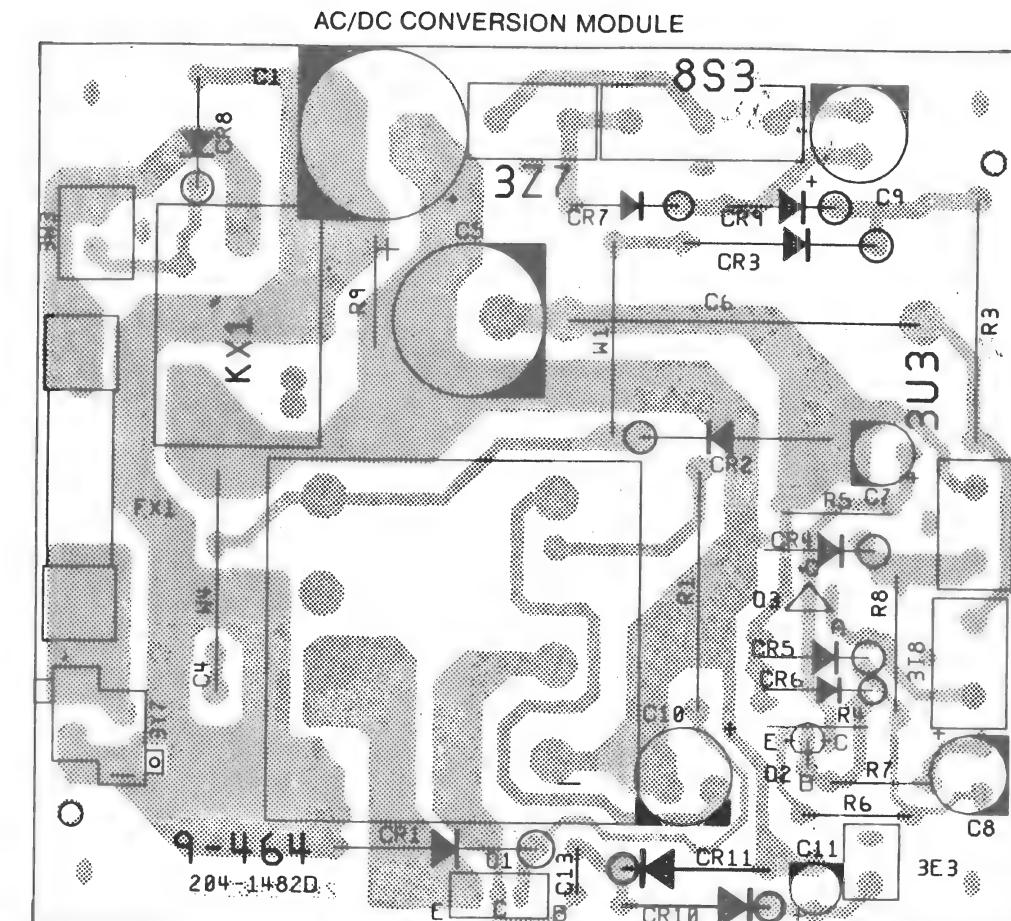


AC/DC CONVERSION MODULE

A PHOTOFAC T STANDARD NOTATION SCHEMATIC

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AC / DC CONVERSION MODULE



AC/DC CONVERSION MODULE

DC/AC CONVERSION MODULE (9-464)		
REF. NO.	PART NO.	DESCRIPTION
BRI	12-8919	METAL STAMP BRACKET MOUNTING CONVERTER
CAPACITORS		
C1	22-7859-16	4700 MFD 20V 16V ELECTROLYTIC
C4	22-7672-26	.00062 MFD 55V 1600V POLYPROPYLENE
	86-848	PC WIRE GRIP TERMINAL
C5	22-7909	47 MFD +50% AND -10% 200V ELECTROLYTIC
C6	22-8043	2.2MFD 10X 630V POLYESTER
	86-848	PC WIRE GRIP TERMINAL
C7	22-7850-09	100 MFD 20% 10V ELECTROLYTIC
C8	22-7860-09	100 MFD 20% 25V ELECTROLYTIC
C9	22-7992-07	2.2 MFD 20% 200V ELECTROLYTIC
	86-848	PC WIRE GRIP TERMINAL
C10	22-7860-12	470 MFD 20% 25V ELECTROLYTIC
	86-848	PC WIRE GRIP TERMINAL
C11	22-7864-02	2.2 MFD 20% 100V ELECTROLYTIC
C13	22-7774-07	0.0033 MFD 10X 100V POLYESTER
C14	22-7786	1000pF 10X 500V DISC
C15	22-7811	1000pF 10% 1000V DISC
C16	22-7811-08	100pF 20% 1000V DISC
C17	22-7811-03	220pF 20% 1000V DISC
C18	22-7786	1000pF 10% 500V DISC
C19	22-7786	1000pF 10% 500V DISC
DIODES		
CR1	103-326	LOW VOLTAGE
	103-298-05	LOW VOLTAGE
CR3	103-298-03	LOW VOLTAGE
CR4	103-254-01	LOW VOLTAGE
CR5	103-254-01	LOW VOLTAGE
CR6	103-279-22	13V 0.5W ZENER
CR7	103-315-04	LOW VOLTAGE
CR8	103-254-01	LOW VOLTAGE
CR9	103-298-05	LOW VOLTAGE
CR10	103-326	LOW VOLTAGE
CR11	103-326	LOW VOLTAGE
FUSES		
216-119-26 NORMAL LAG 6 AMP 250V		
19-848-02 HOLDER CLIP		
RELAY		
199-119-04 RELAY		
COILS		
L1	149-458	FERRITE BEAD CORE
L2	149-458	FERRITE BEAD CORE
TRANSISTORS		
Q1	121-1160	NPN
	19-1076	MOUNTING CLIP
	19A-1367-03	INSULATING STRIP
Q2	121-973	PNP
Q3	183-16	THYRISTOR SCR

DC/AC CONVERSION MODULE (CONT.)

RESISTORS

R1	63-10420-26	1.2 OHM 5% 2W W/W
	86-848	PC WIRE GRIP TERMINAL
R3	63-10837-14	56K OHM 5% 2W FILM
	86-848	PC WIRE GRIP TERMINAL
R4	63-10236-32	330K OHM 5% 1/4W FILM
R5	63-10235-72	1K OHM 5% 1/4W FILM
R6	63-10235-60	330 OHM 5% 1/4W FILM *
R7	63-10235-04	3.3K OHM 5% 1/4W FILM
R8	63-10244-12	47K OHM 5% 1/2W FILM
R9	63-10235-72	1K OHM 5% 1/4W FILM

TRANSFORMER

T1	95-3827-01	INVERTER
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WIRES

W1	91-2053	22 GAUGE
W4	91-2053	22 GAUGE

MISCELLANEOUS COMPONENTS

A-14591	POWER PLUG AND CABLE ASSEMBLY
43-1785	3 CIRCUIT HOUSING CONNECTOR
50-278-03	CABLE AND CONNECTOR ASSEMBLY
50-M25-00134	CABLE AND CONNECTOR HOUSING
58-807	DUAL SWITCHING CONNECTOR
64-519-03	ROLLED FLANGE EYELET
86-783	CRIMP TYPE TERMINAL (1 REQ.)
86-799	TERM PIN (13 REQ.)
112-793-01	6-20X0.375 RECESSED CROSS CUT
	ROUND HEAD THREAD FORM SCREW (2 REQ.)
114-803	6-20X1/4X1/4AF HEX WASHER HEAD
	THREAD FORM SCREW (4 REQ.)
	MOUNTS PC BOARD TO BRACKET
149-535	FERRITE CORE
194-420	INSULATOR INSERT
194-1715	INSULATING STRIP

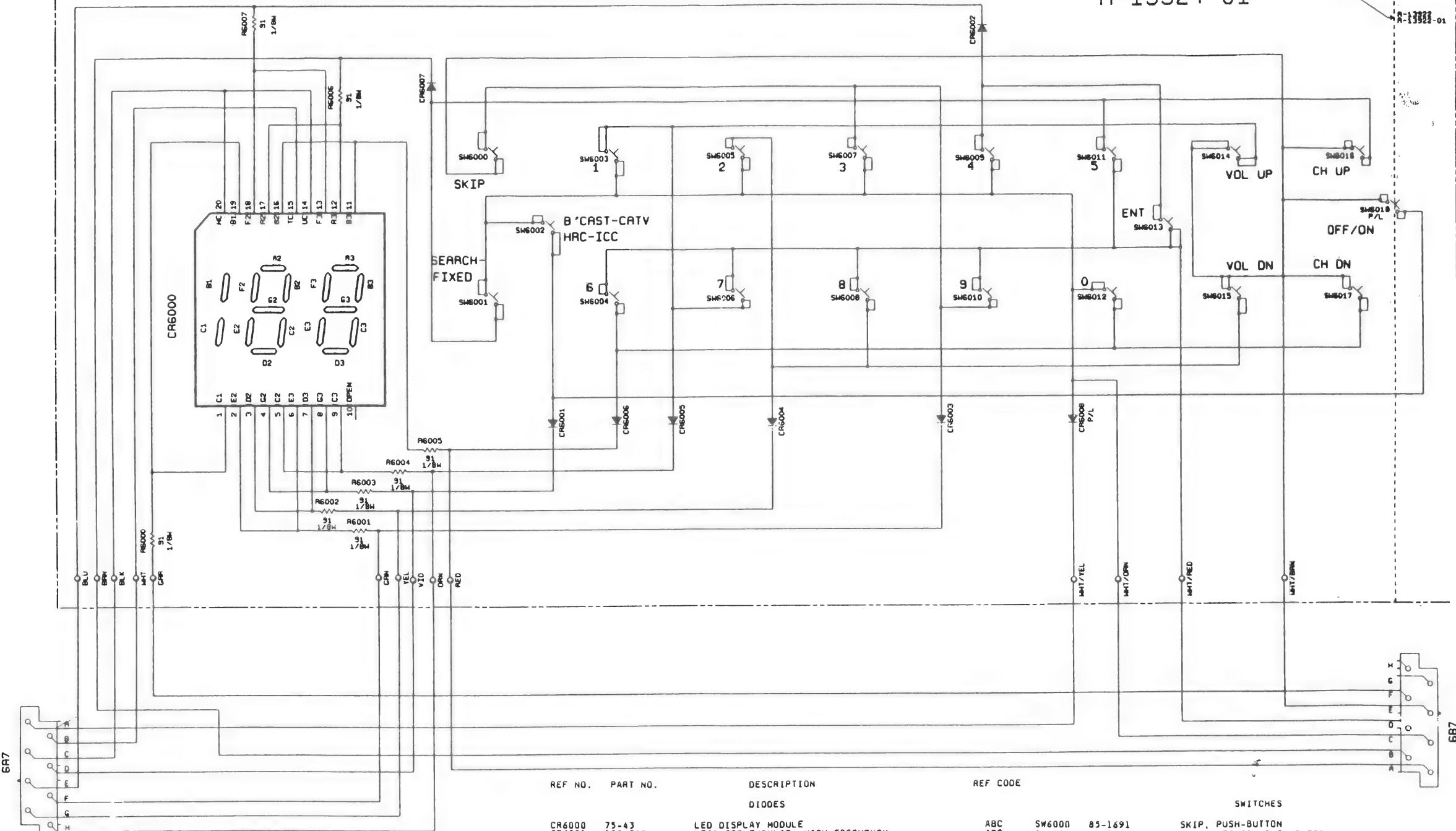
Courtesy of Manufacturer

Courtesy of Manufacturer

NOTE: WHEN A-13924 IS BUILT THE
BOARD IS SHEARED AT THE BREAKAWAY-

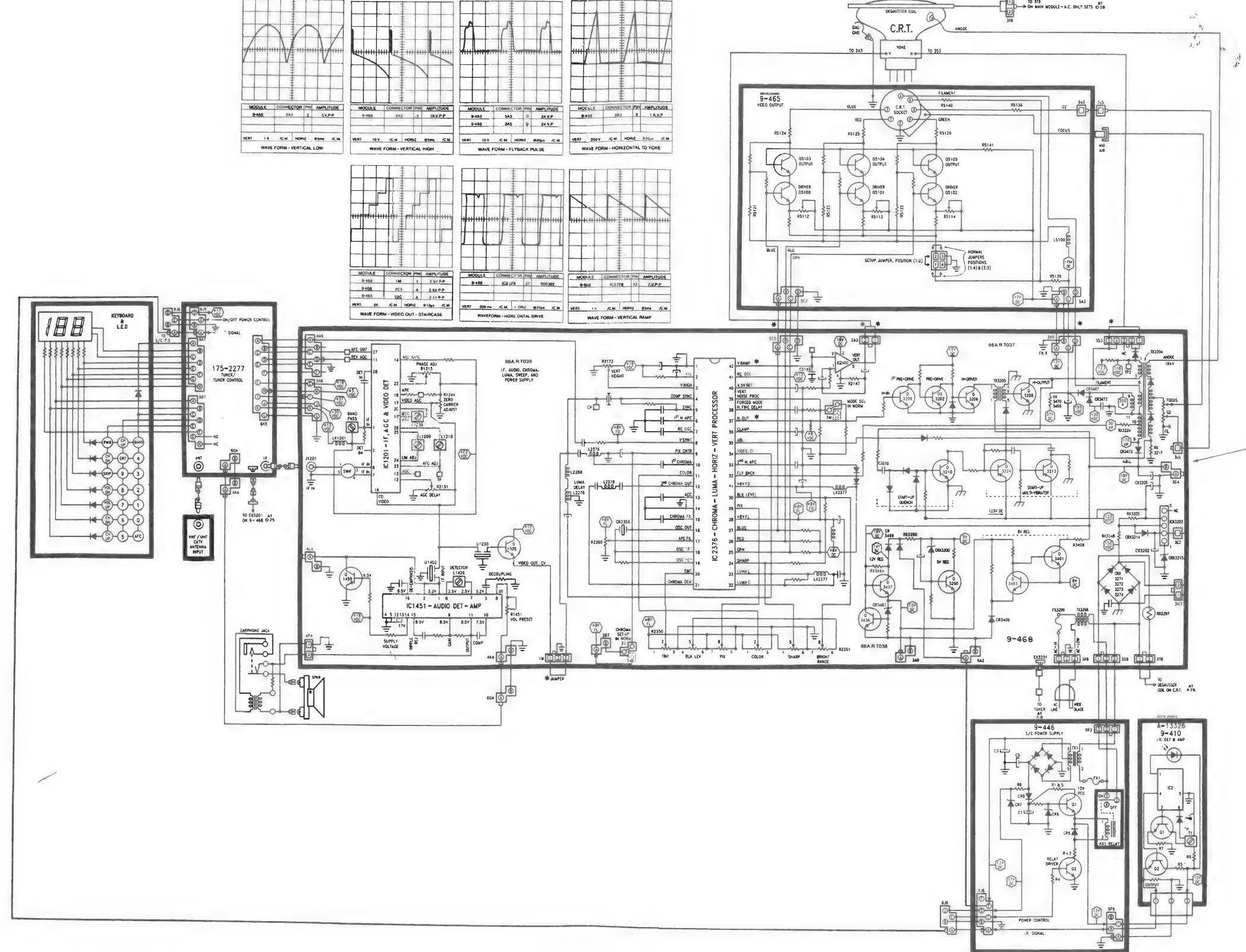
KEYBOARD ASSY SCHEMATIC

A-13924
A-13924-01



NOTE: THIS COMBINED PARTS LIST WILL ENABLE YOU TO MORE EASILY IDENTIFY THE NUMBER OF PARTS USED ON EACH MODEL, CHASSIS OR ASSEMBLY. EACH PART HAS BEEN ASSIGNED A REFERENCE CODE WHICH IS IN THE COLUMN TO THE LEFT OF THE DESCRIPTION.

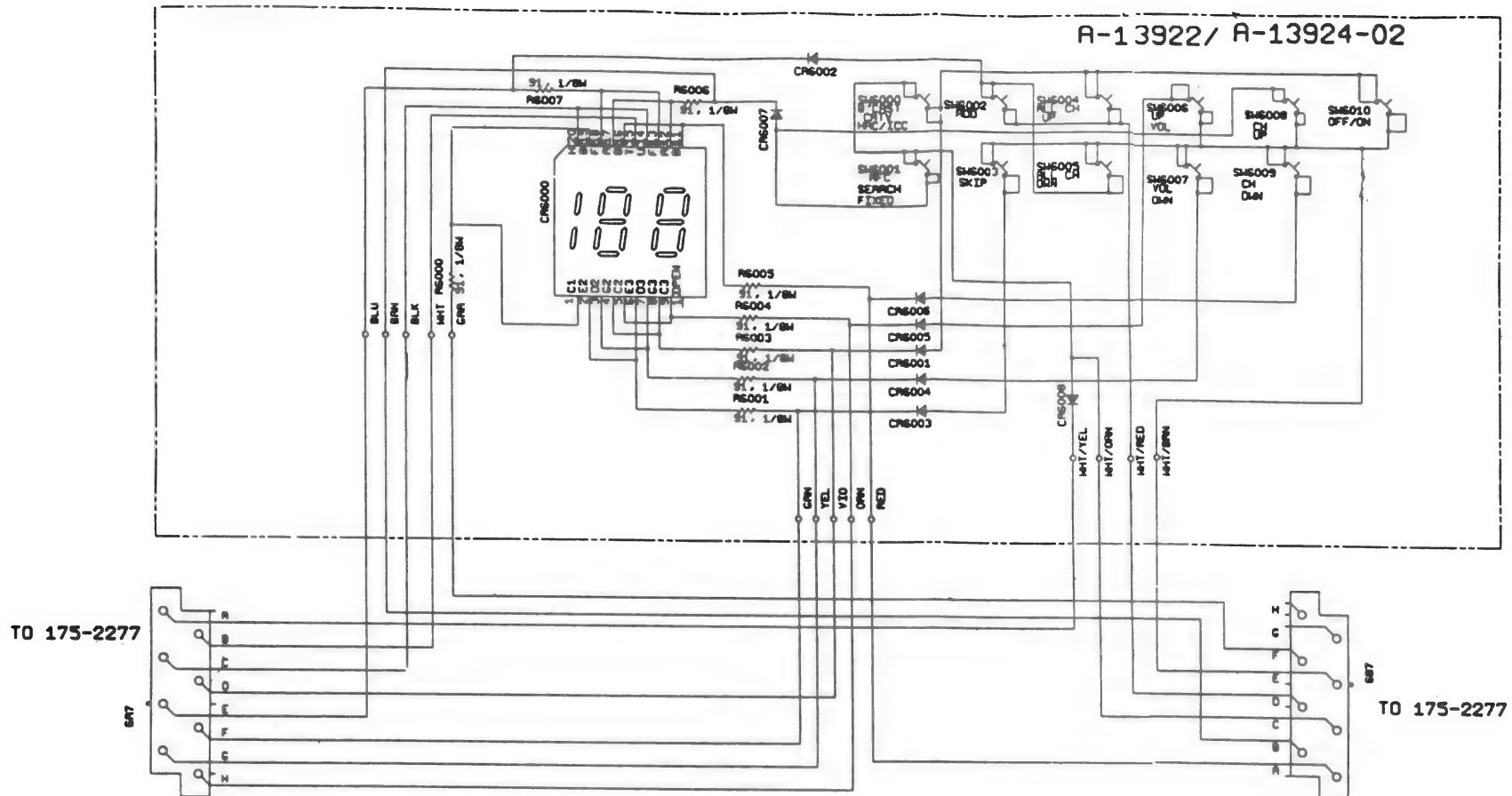
Courtesy of Manufacturer



Courtesy of Manufacturer

INTERCONNECT WIRING DIAGRAM

INTERCONNECT WIRING DIAGRAM



KEYBOARD AND LED ASSEMBLIES

ASSEMBLY NO.	REFERENCE CODE	ASSEMBLY NO.	REFERENCE CODE
A-13922	A	A-13922-01	B
A-13924	C		

NOTE: THIS COMBINED PARTS LIST WILL ENABLE YOU TO MORE EASILY DETERMINE THE PART NUMBER OF PARTS USED ON EACH MODEL, CHASSIS OR ASSEMBLY. EACH OF THESE HAS BEEN ASSIGNED A REFERENCE CODE WHICH IS IN THE COLUMN TO THE RIGHT OF THE DESCRIPTION.

REF NO.	PART NO.	DESCRIPTION	REF CODE
		DIODES	

CR6000	75-43	LED DISPLAY MODULE	ABC
CR6001	103-393	LEADLESS TUBULAR, HIGH FREQUENCY	ABC
CR6002	103-393	LEADLESS TUBULAR, HIGH FREQUENCY	ABC
CR6003	103-393	LEADLESS TUBULAR, HIGH FREQUENCY	ABC
CR6004	103-393	LEADLESS TUBULAR, HIGH FREQUENCY	ABC
CR6005	103-393	LEADLESS TUBULAR, HIGH FREQUENCY	ABC
CR6006	103-393	LEADLESS TUBULAR, HIGH FREQUENCY	ABC
CR6007	103-393	LEADLESS TUBULAR, HIGH FREQUENCY	ABC
CR6008	103-393	LEADLESS TUBULAR, HIGH FREQUENCY	ABC

RESISTORS

R6000	63-10979-23	91 OHM 5% 1/8W LEADLESS FILM	ABC
R6001	63-10979-23	91 OHM 5% 1/8W LEADLESS FILM	ABC
R6002	63-10979-23	91 OHM 5% 1/8W LEADLESS FILM	ABC
R6003	63-10979-23	91 OHM 5% 1/8W LEADLESS FILM	ABC
R6004	63-10979-23	91 OHM 5% 1/8W LEADLESS FILM	ABC
R6005	63-10979-23	91 OHM 5% 1/8W LEADLESS FILM	ABC
R6006	63-10979-23	91 OHM 5% 1/8W LEADLESS FILM	ABC
R6007	63-10979-23	91 OHM 5% 1/8W LEADLESS FILM	ABC

Courtesy of Manufacturer

SWITCHES

SW6000	85-1691	SKIP, PUSH-BUTTON	ABC
SW6001	85-1691	SEARCH FIXED, PUSH-BUTTON	ABC
SW6002	85-1691	BAND, PUSH-BUTTON	ABC
SW6003	85-1691	(1), PUSH-BUTTON	ABC
SW6004	85-1691	(6), PUSH-BUTTON	ABC
SW6005	85-1691	(2), PUSH-BUTTON	ABC
SW6006	85-1691	(7), PUSH-BUTTON	ABC
SW6007	85-1691	(3), PUSH-BUTTON	ABC
SW6008	85-1691	(8), PUSH-BUTTON	ABC
SW6009	85-1691	(4), PUSH-BUTTON	ABC
SW6010	85-1691	(9), PUSH-BUTTON	ABC
SW6011	85-1691	(5), PUSH-BUTTON	ABC
SW6012	85-1691	(0), PUSH-BUTTON	ABC
SW6013	85-1691	ENT, PUSH-BUTTON	ABC
SW6014	85-1691	VOL UP, PUSH-BUTTON	ABC
SW6015	85-1691	VOL DOWN, PUSH-BUTTON	ABC
SW6016	85-1691	CHANNEL UP, PUSH-BUTTON	ABC
SW6017	85-1691	CHANNEL DOWN, PUSH-BUTTON	ABC
SW6018	85-1691	OFF/ON, PUSH-BUTTON	ABC

JUMPERS

AB	W1	63-10979	ZERO OHM 5% 1/8W LEADLESS FILM
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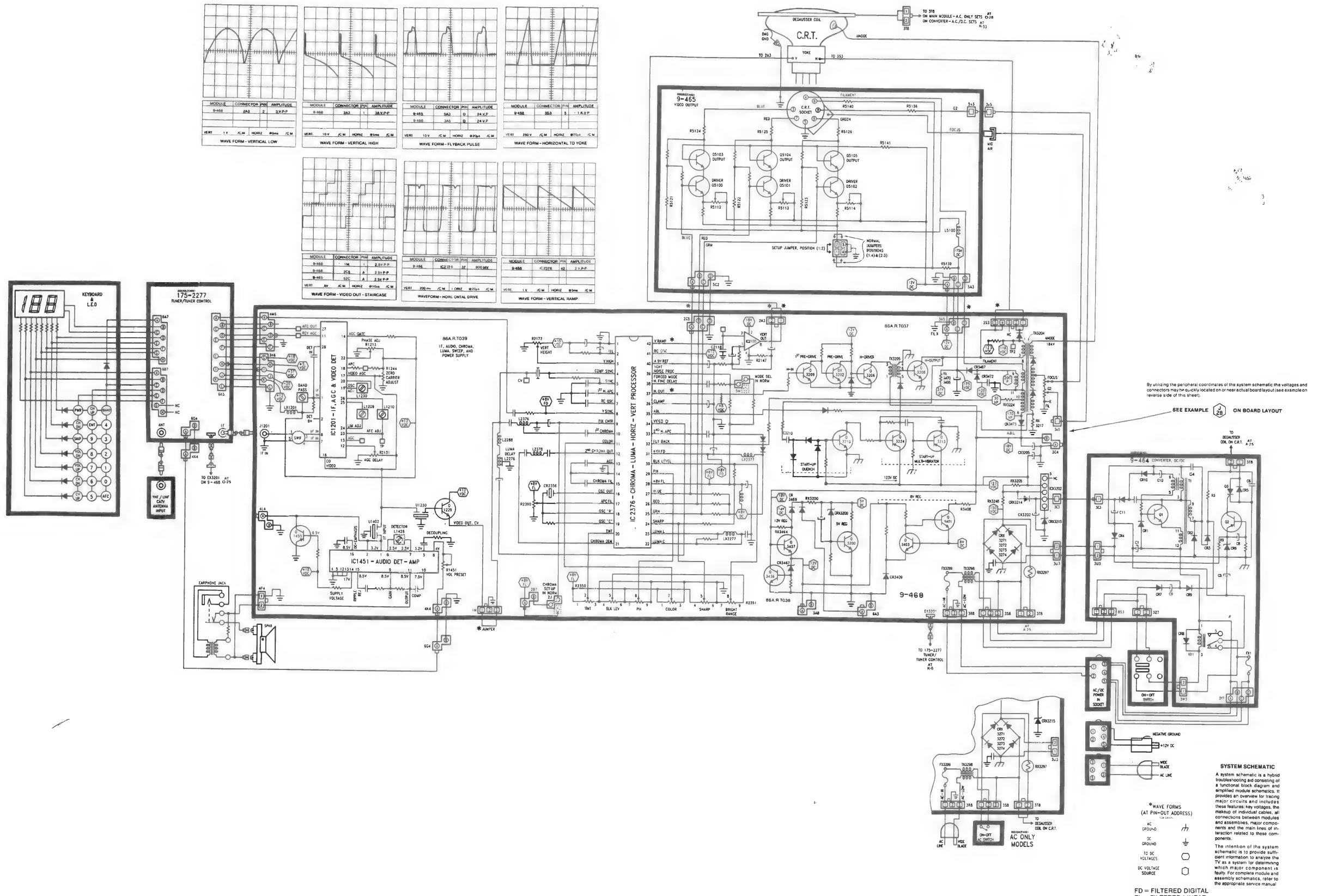
CABLES

ABC	6A6	50-M25-00025	CABLE AND CONNECTOR HOUSING	C
ABC	6A7	50-M25-00072	CABLE AND CONNECTOR HOUSING	AB
ABC	6B7	50-M25-00026	CABLE AND CONNECTOR HOUSING	C

MISCELLANEOUS COMPONENTS

46-10460	PUSH-BUTTON KNOB ARRAY	C
46-10461	PUSH-BUTTON KNOB ARRAY	A
46-10462	PUSH-BUTTON KNOB ARRAY	B
6A-1032	GRIPPLET (14 REQ.)	
82-351	GROUND PLATE	AB
82-349	GROUND PLATE	C
112-2071	4-24X1/4 RECESSED CROSS CUT PAN HEAD (4 REQ.)	ABC
194-1647-01	THREAD CUT SCREW (4 REQ.)	
	FOAM CUSHION	ABC

ZENITH MODELS D0920A/D/K/U, D0930S, SD0921A/S

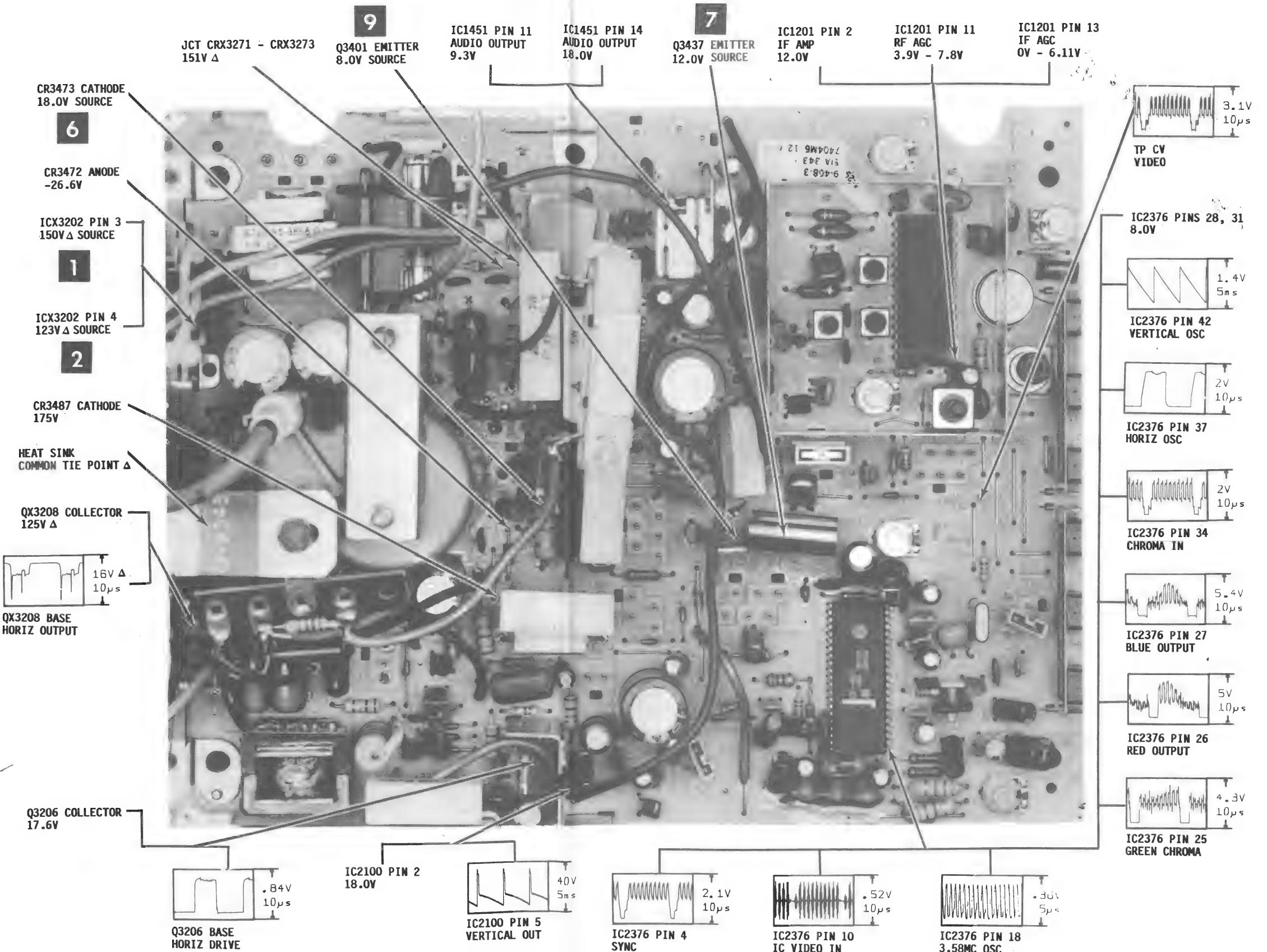


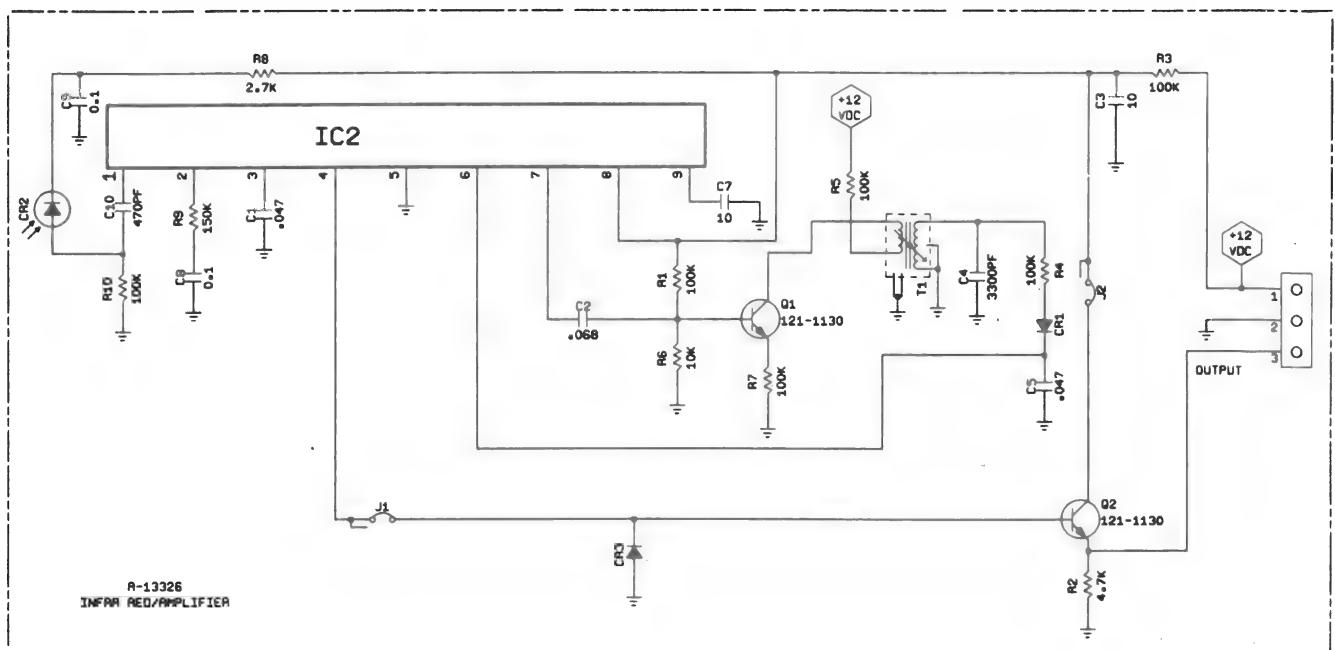
Courtesy of Manufacturer

INTERCONNECT WIRING DIAGRAM

INTERCONNECT WIRING DIAGRAM

SET 2698 FOLDER 2





INFRARED DETECTOR/AMPLIFIER (A-13326)

INFRARED DETECTOR/AMPLIFIER (A-13326)
PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
C1	22-8003	.047MFD 5% 50V CERAMIC CHIP CAP (2 REQ)
C2	22-8003-01	.068MFD 5% 50V CERAMIC CHIP CAP.
C3	22-8020-12	10MFD 20% 16V ELECTRO CAP. (2 REQ)
C4	22-7759-01	330pF 10% 100V LAYERED CERAMIC CAP.
C5	22-8003	.047MFD 5% 50V CERAMIC CHIP CAP.
C7	22-8020-12	10MFD 20% 16V ELECTRO CAP.
C8	22-8003-02	.1 MFD 5% 50V CERAMIC CHIP
C9	22-8003-02	.1MFD 5% 50V CERAMIC CHIP CAP. (2 REQ)
C10	22-7936-02	470pF 20% 50V CERAMIC CAP
CR1	103-398	LOW VOLTAGE DIODE
CR2	162-12	PHOTO-DIODE, INFRARED CONDUCTIVE
CR3	103-398	LOW VOLTAGE DIODE
IC1	221-187	INTEGRATED CIRCUIT, AMPLIFIER
J1	63-10979	ZERO OHM 5% 1/8W FILM RES.
J2	63-10979	ZERO OHM 5% 1/8W FILM RES.
Q1	121-1130	TRANSISTOR
Q2	121-1130	TRANSISTOR
R1	63-10979-93	100K OHM 5% 1/8W FILM RES.
R2	63-10979-62	4.7K OHM 5% 1/8W FILM RES.
R3	63-10979-24	100 OHM 5% 1/8W FILM RES.
R4	63-10979-70	10K OHM 5% 1/8W FILM RES.
R5	63-10979-24	100 OHM 5% 1/8WFILM RES.
R6	63-10979-70	10K OHM 5% 1/8W FILM RES.
R7	63-10979-24	100 OHM 5% 1/8W FILM RES.
R8	63-10979-57	2700 OHM 5% 1/8W FILM RES.
R9	63-10979-28	150 OHM 5% 1/8W FILM RES.
R10	63-10979-93	100K OHM 5% 1/8W FILM RES.
T1	95-3792	RCF TRANSFORMER
	43-2034	INFRARED DETECTOR HOUSING
	58-489-03	3 CIRCUIT CONNECTOR
	126-2348-01	INFRARED DETECTOR SHIELD
	126-2349	GRILLE, IR DETECTOR
	192-748	INFRARED FILTER LENS
	194-863	DIODE SPACER
	194-1448-01	INSULATING STRIP

Courtesy of Manufacturer

INFRARED DETECTOR/AMPLIFIER MODULE (A-13326)

MISCELLANEOUS ADJUSTMENTS

PRETUNE

1. Connect antenna.
2. Momentarily depress the Power button.
3. Set b'cast/CATV button to desired band by repeatedly depressing button until proper symbol appears in channel display window. Set to b (broadcast), c (CATV), h (HRC Cable) or i (ICC Cable).
4. Set AFC button by repeatedly depressing button until proper symbol appears in channel display window. Set to F (fixed, or standard broadcast) or S (Search for CATV or video games).
5. Select channel to be removed from memory. Use channel Up and Channel Down buttons.
6. Press the Skip button. P0 (program out) will be displayed.
7. Repeats steps 5 and 6 to remove other channels from memory.

Adding channels to memory:

8. Follow steps 1 thru 4.
9. Select channel. Use direct channel access buttons.
10. Press the Enter button
11. Repeat steps 9 and 10 to add other channels.

NOTE: Unless otherwise indicated all adjustments were made with the following control settings: CATV Switch (SW600) to Broadcast, AFC Switch (SW6001) to Search. Picture (Part of R235), Black Level (Part of R2350), Tint (Part of R2350), Color (Part of R2351) and Sharpness (Part of R2351) to Normal viewing levels.

B+ CHECK

Tune in a picture. Connect a Digital DC voltmeter to TP3204 (1CX3202, pin 4) low side to AC ground. With AC line voltage set to 120VAC, B+ should read 123V +/- 1VDC.

HIGH VOLTAGE CHECK

Tune in a picture. Set Picture (Part of R235), Color (Part of R2351) and Black Level (Part of R2350) to MINIMUM. Connect a high voltage probe to CRT anode. High voltage should read 17.0KV to 17.9KV. High voltage must never exceed 18KV under any conditions.

AGC DELAY ADJUSTMENT

Tune in a weak picture. Adjust AGC Delay Control (R1231) clockwise until snow (noise) appears in picture, then counterclockwise until snow disappears.

VOLUME PRESET ADJUSTMENT

Tune in a picture. Set Volume to Midrange. Adjust Volume Preset Control (R1451) for desired volume level.

COLOR FILTER ADJUSTMENT

Tune in a color bar pattern. Connect a DC voltmeter to TP2390 (wiper of R2390). Adjust Color Filter Control (R2390) for 4.0VDC.

BRIGHTNESS LEVEL ADJUSTMENT

Tune in a picture. Set Black Level (Part of R2350) to Detent, Color (Part of R2351) and Picture (Part of R2350) to MINIMUM. Adjust Brightness Range (Part of R2351) for just visible picture.

COLOR PURITY ADJUSTMENT

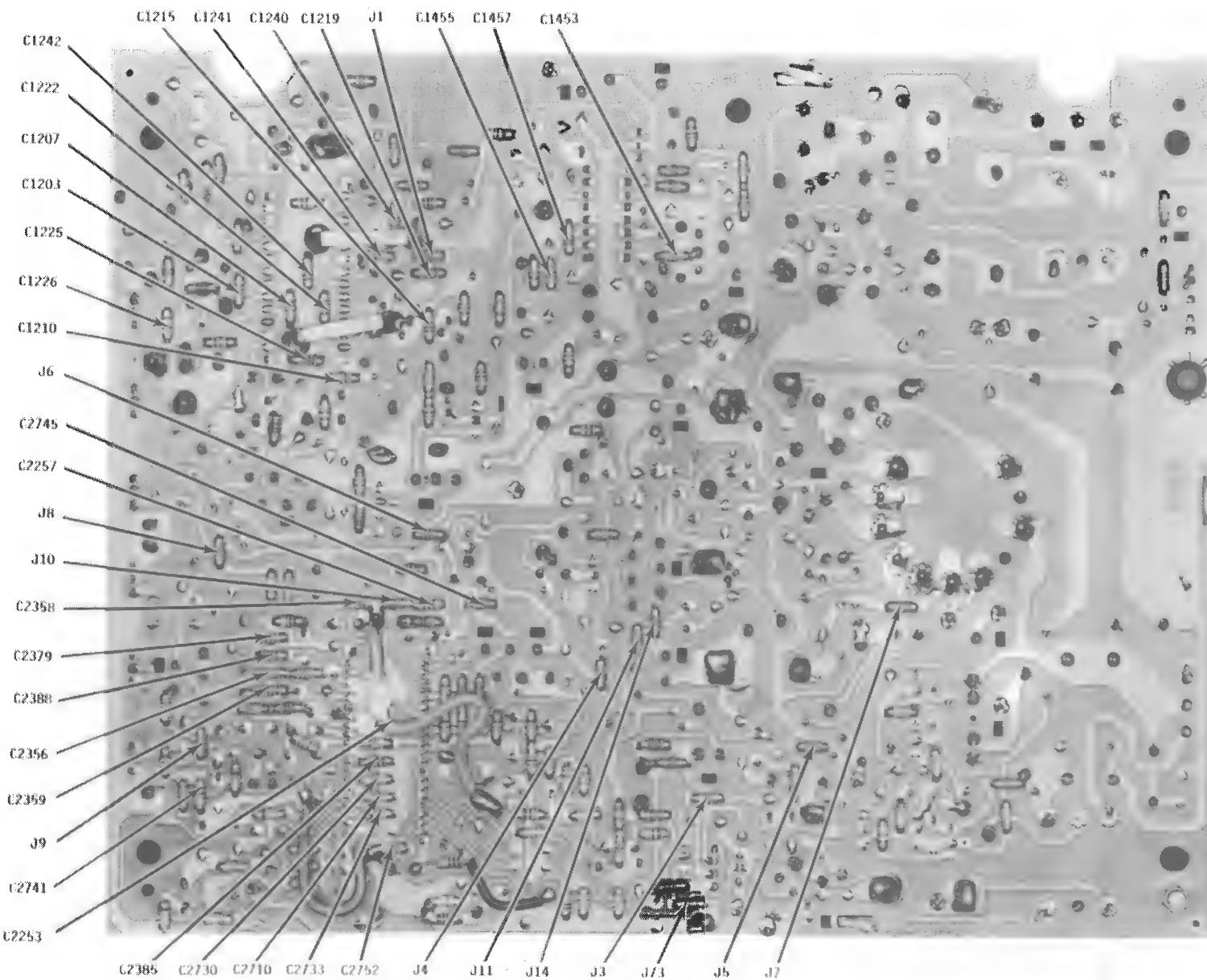
Operate set for 20 minutes. Use a degaussing coil to demagnetize CRT and mounting brackets. Set Color (Part of R2351) and Picture (Part of R2350) Controls to MINIMUM. Remove Jumper Plug (1M). Set Black Level (Part of R2350) for a visible raster. Set Blue (R5112) and Green (R5114) Controls to MINIMUM. Advance Red (R5113) Control to produce a red raster. Loosen Deflection Yoke clampscrew and slide the yoke backward. Adjust purity tabs to center the vertical red band. Slide the yoke forward until a uniform red screen is obtained. Check Blue and Green purity. Tighten Deflection Yoke clampscrew. If corner purity still needs correction, order Picture Tube Correction Kit (p/n 949-50). Place Correction Magnet on CRT rear near yoke, move magnet around to find best correction. Tape in place with fiberglass tape. Repeat purity adjustment.

BLACK AND WHITE TRACKING ADJUSTMENT

Tune in a picture. Set Color (Part of R2351) and Picture (Part of R2350) to MINIMUM. Set Black Level (Part of R2350) to Detent. Set Blue (R5112), Red (R5113) and Green (R5114) Controls to MINIMUM. Set Screen Control (R3249B) to MINIMUM. Remove power from set, remove Plug 2A3 (Vertical Deflection) and Jumper Plug (1M), then restore power. Advance Screen Control until a dim line of one color appears. Advance 2 Color Controls to produce a white line. Set Black Level and Picture to Maximum. Check tracking. Touch up Color Controls as necessary for best black and white picture.

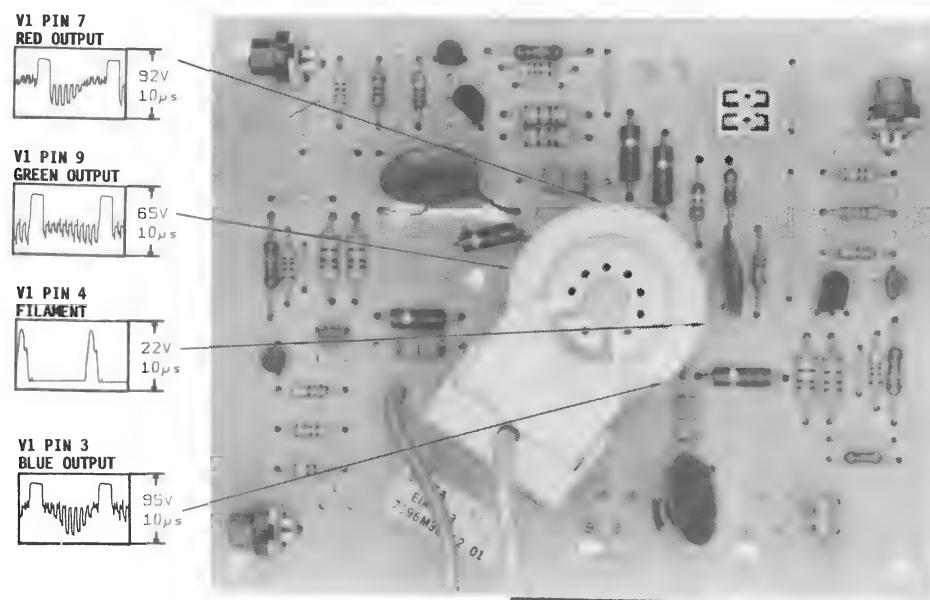
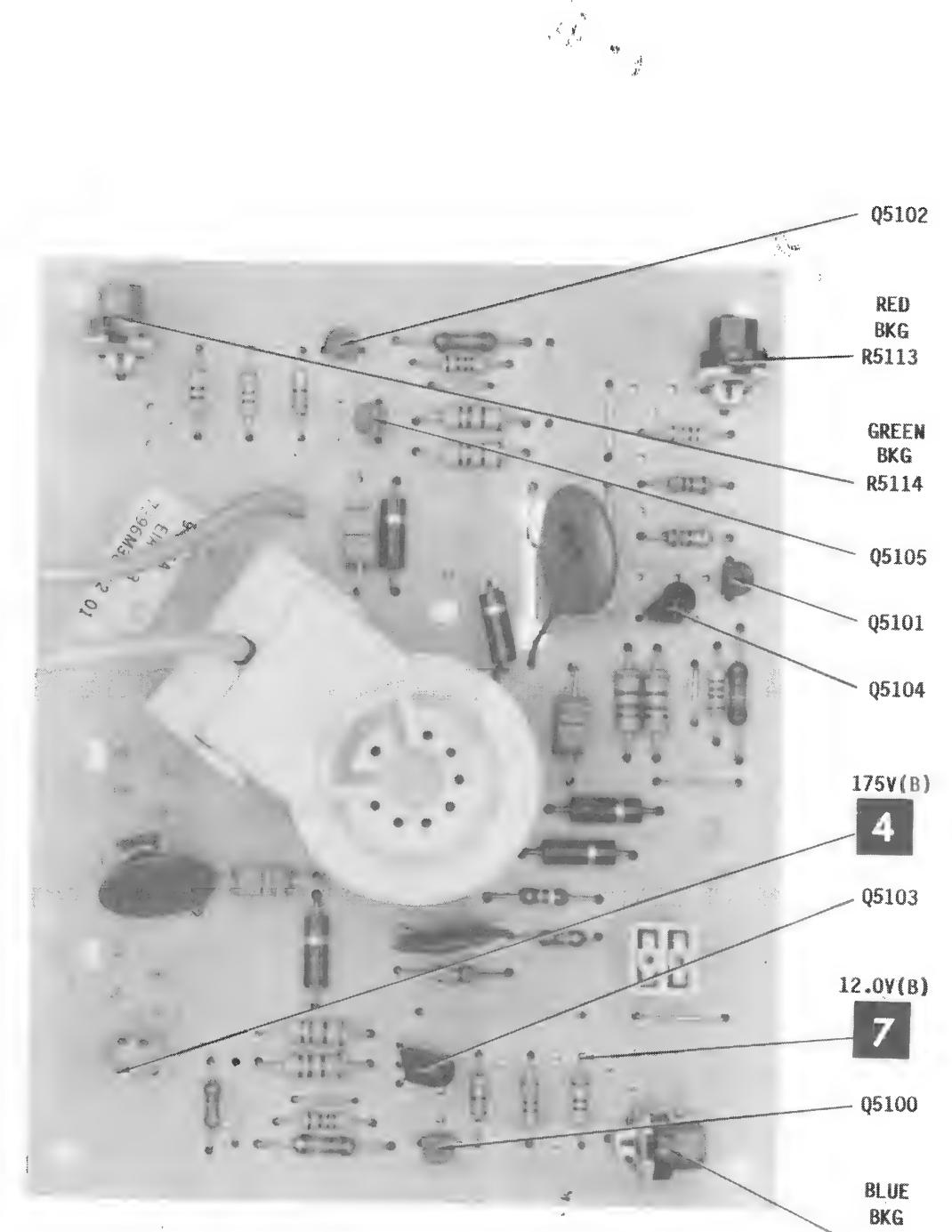
CONVERGENCE ADJUSTMENTS

Connect a color bar generator to the antenna terminals and tune in a dot pattern. Loosen locking ring. Adjust 4-pole magnet tabs to converge the red and blue dots at the center of the screen. Adjust the 6-pole magnet tabs to converge the red/blue dots over the green dots at the center of the screen. NOTE: Rotate the two tabs of each set of magnets equally and opposite to converge vertically and rotate both tabs in the same direction to converge horizontally. 4 and 6-pole magnets interact, repeat adjustment until center convergence is correct. Tighten locking ring. Tune in a crosshatch pattern. Remove rubber wedges between the Deflection Yoke and the CRT. Tilt Deflection Yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the right and left sides of the screen. Tilt the Deflection Yoke right and left to converge the horizontal lines at top and bottom of the screen and the vertical lines at the right and left sides of the screen. Repeat convergence procedure if necessary to obtain the best overall convergence. Replace the rubber wedges. Tighten yoke clampscrew.



MAIN BOARD-BOTTOM VIEW

MAIN BOARD-BOTTOM VIEW



CRT BOARD

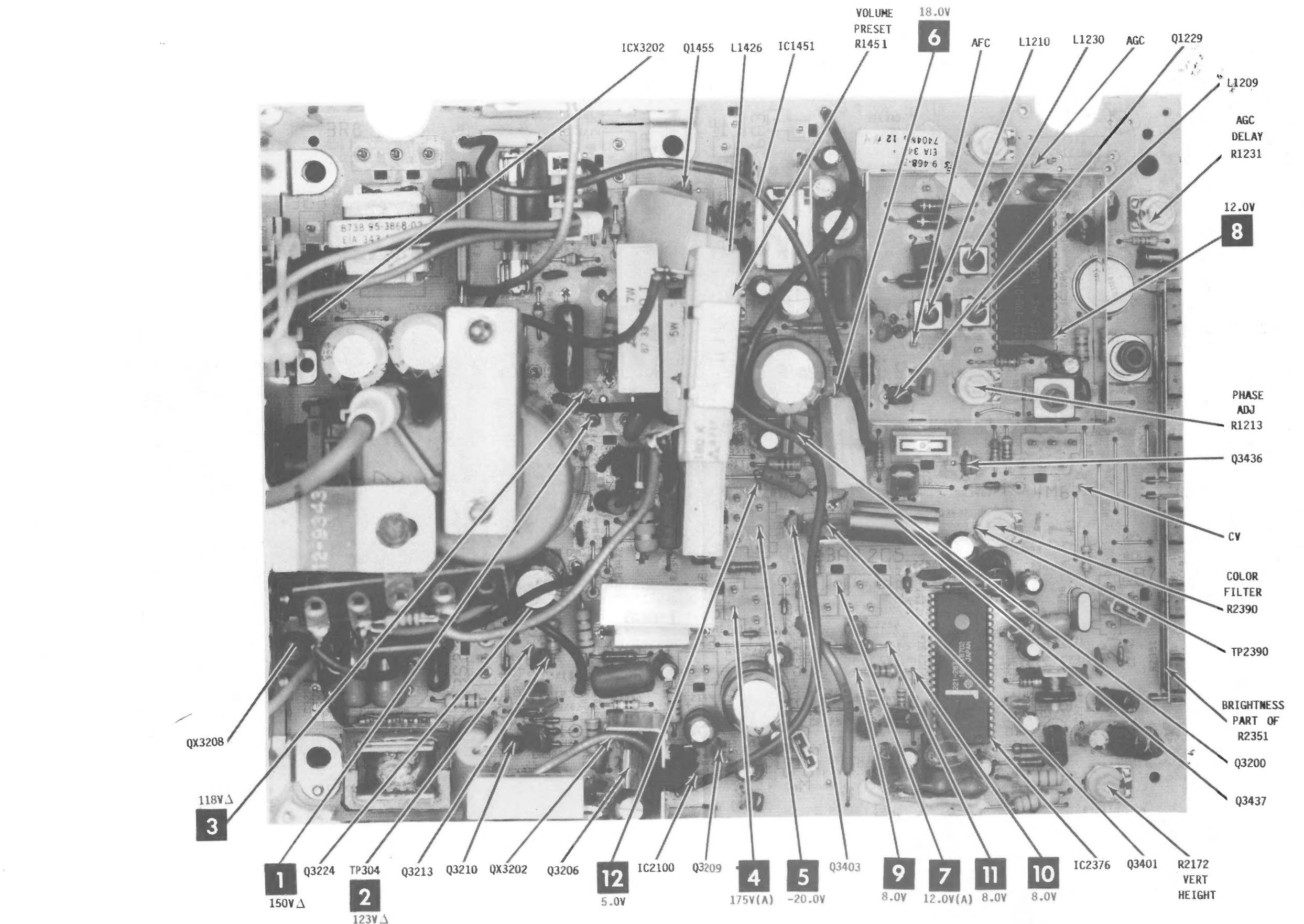
A Howard W. Sams QUICK-CHECKS™ Photo

A Howard W. Sams CIRCUITRACE™ Photo

CRT BOARD

MAIN BOARD-GridTrace LOCATION GUIDE

AFC	G-18	C3261	O-5	LX2377	P-17	Q3403	L-14	R1244	B-20	R2714	R-21	R3406	L-16	RX3214	P-10	RX3468	L-11	2A3	0-12	3T8	B-10	
AGC	B-21	C3270	E-9	LX2379	O-16	Q3436	J-19	R1451	F-13	R2715	S-21	R3463	J-17	RX3225	S-8	RX3470	L-11	2B7	N-23	3U3	I-10	
C30	O-4	C3271	C-9	Q1229	H-17	Q3437	L-17	R1455	D-15	R2716	R-21	R3467	K-12	RX3233	O-10	RX3477	N-11	2C5	M-17	3X5	M-6	
C1206	H-22	C3272	E-8	Q1455	C-12	QX3202	O-10	R2172	S-23	R2745	Q-17	RX1454	E-15	RX3237	O-11	RX3496	L-10	3A5	N-13	4L4	A-13	
C1210	H-20	C3437	J-11	Q3200	I-15	QX3208	O-1	R2257	M-19	R3213	P-6	RX1456	G-13	RX3248	F-10	TX3204	J-6	3A8	M-16	4K4	F-12	
C1216	G-18	C3438	K-17	Q3206	R-10	R44	N-4	R2350	I-24	R3216	Q-6	RX1457	G-13	RX3249	G-10	TX3205	R-4	3C4	H-13	4P4	G-16	
C1217	F-18	C3468	H-14	Q3209	R-12	R1201	G-22	R2351	O-24	R3220	Q-9	RX1460	G-15	RX3261	G-2	TX3298	D-4	3E3	D-2	4M6	J-21	
C1227	C-21	C3469	N-10	Q3210	Q-7	R1213	H-19	R2381	M-22	R3234	P-10	RX2106	Q-11	RX3274	A-7	U1201	E-23	3K6	K-13	5M	R-15	
C1229	J-20	C3470	J-11	Q3213	O-8	R1230	D-24	R2390	L-20	R3263	K-14	RX2704	M-13	RX3297	D-11	U1230	H-18	3R8	B-4	6A3	A-14	
C1233	D-22	C3471	K-10	Q3224	N-17	R1231	D-24	R2711	P-17	R3267	J-14	RX3200	L-12	RX3408	J-16	U1402	B-13	3S3	O-6			
C1235	C-20	C3472	L-9	Q3401	L-15	R1232	J-20	R2713	R-21	R3404	M-15	RX3201	E-2	RX3464	G-11	1M	J-18	3S8	C-8			
C1243	E-18	C3796	M-8																			
C1251	C-23	CR5	O-2																			
C1299	G-17	CR2149	R-11																			
C1426	E-13	CR2253	Q-15																			
C1427	D-12	CR2356	N-22																			
C1429	D-13	CR2701	O-13																			
C1451	F-15	CR2702	N-14																			
C1452	F-14	CR3201	Q-8																			
C1456	F-16	CR3202	Q-8																			
C1459	D-16	CR3203	Q-8																			
C1460	B-16	CR3210	R-10																			
C1461	C-16	CR3216	O-7																			
C1462	C-15	CR3220	O-7																			
C1463	B-15	CR3409	M-15																			
C1466	D-12	CR3467	K-20																			
C2118	R-18	CR3468	I-12																			
C2124	Q-11	CR3469	J-11																			
C2125	S-9	CR3472	L-10																			
C2130	P-10	CR3473	J-10																			
C2131	R-13	CR3473A	J-10																			
C2148	P-14	CR3487	M-9																			
C2149	Q-12	CRX3200	I-14																			
C2152	R-14	CRX3214	E-3																			
C2171	R-23	CRX3271	D-10																			
C2250	P-16	CRX3272	C-9																			
C2251	R-17	CRX3273	E-9																			
C2252	Q-16	CRX3274	F-8																			
C2254	R-17	CX3201	O-11																			
C2280	O-16	CX3202	G-3																			
C2281	Q-17	CX3205	G-5																			
C2282	M-18	CX3219	O-14																			
C2355	N-20	CX3222	P-2																			
C2362	O-21	CX3225	I-10																			
C2365	M-19	CX3228	P-3																			
C2376	O-22	CX3229	P-4																			
C2377	P-22	CX3231	N-3																			
C2378	O-20	CX3299	C-8																			
C2381	P-21	EX3201	D-6																			
C2382	M-21	FX3299	C-7																			
C2384	P-23	IC1201	G-21																			
C2389	P-21	IC1451	C-14																			
C2390	M-20	IC2100	R-12																			
C2393	N-20	IC2376	Q-19																			
C2701	P-20	ICX3202	E-1																			
C2704	Q-18	J1201	H-23																			
C2707	P-17	L1203	C-18																			



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED.
 Δ TAKEN FROM COMMON TIE POINT.

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.				
		NTE PART No.	ECG PART No.	TCE PART No.	NOTES
CR5					
CR2149	103-254-01	NTE116	ECG116	SK3313/116	
CR2253	103-142-01	NTE177	ECG177	SK9091/177	
CR2701,2	103-142-01	NTE177	ECG177	SK9091/177	
CR3201	103-254-01	NTE116	ECG116	SK3313/116	
CR3202					
CR3203					
CR3210	103-142-01	NTE177	ECG177	SK9091/177	
CR3216	103-295-02	NTE177	ECG177	SK9091/177	
CR3220	103-295-02	NTE177	ECG177	SK9091/177	
CR3409	103-336-15	NTE5015A	ECG5015A	SK7A5/5015A	
CR3467	103-309-01	NTE5019A	ECG5019A	SK10A/5019A	
CR3468					
CR3469					
CR3472	103-254-01	NTE116	ECG116	SK3313/116	
CR3473	103-368-03	NTE552	ECG552	SK9000/552	
CR3473A	103-368-03	NTE552	ECG552	SK9000/552	
CR3487	103-326	NTE552	ECG552	SK9000/552	
CRX3200	103-412				#
CRX3214	103-254-01	NTE116	ECG116	SK3313/116	#
CRX3271,2,3,4	103-315-06	NTE116	ECG116	SK3313/116	#
IC1201	221-190-01	NTE875	ECG875	SK7725/875	
IC1451	221-158-03	NTE1231A	ECG1231A	SK9384/1231A	
	A-9982-07	NTE1231A	ECG1231A	SK9384/1231A	
IC2100	221-347				#
IC2376	221-267				#
ICX3202	223-18-01				#
Q1229	121-499	NTE123AP	ECG123AP	SK3854/123AP	
Q1455	121-973	NTE159	ECG159	SK3466/159	
Q3200	121-966-03	NTE152	ECG152	SK3893/152	
Q3206	121-1037	NTE171	ECG171	SK3201/171	
Q3209	121-975	NTE123AP	ECG123AP	SK3854/123AP	
Q3210	121-1146	NTE287	ECG287	SK3433/287	
Q3213	121-1101	NTE159	ECG159	SK3466/159	
Q3224	121-1101	NTE159	ECG159	SK3466/159	
Q3401	121-966-03	NTE152	ECG152	SK3893/152	
Q3403,36	121-499-01	NTE123AP	ECG123AP	SK3854/123AP	
Q3437	121-966-03	NTE152	ECG152	SK3893/152	
Q5100,01,02	121-895	NTE123AP	ECG123AP	SK3854/123AP	
Q5103,4,5	121-1140	NTE399	ECG399	SK9352/399	
QX3202	121-975	NTE123AP	ECG123AP	SK3854/123AP	
QX3208	121-1141	NTE2302	ECG2302	SK9422	

For SAFETY use only equivalent replacement part.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFGR. PART No.
C2727	.47 50V 10%	22-7669-11
C2731	1 35V NP	22-7406-01
C3249	470 200V	22-7908-02
CX3201	4.7 35V	22-7861-04

For SAFETY use only equivalent replacement part.

Items Not Listed Are Normally Available At Local Distributors.

ITEM No.	RATING	MFGR. PART No.
# CX3202	33 200V	22-7962-14
# CX3205	33 200V	22-7962-14
# CX3219	1 50V	22-7862-01

For SAFETY use only equivalent replacement part.

Items Not Listed Are Normally Available At Local Distributors.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

CAPACITORS

ITEM No.	RATING	MFGR. PART No.
C1210	13 NPO 50V 5%	22-7743-15
C1211	56 NPO 50V 5%	22-8035-30
C1213	2.2pF NPO 50V 10%	22-8033-04
C1215	30 NPO 50V 5%	22-8034-23
C1216	51 NPO 50V 5%	22-7621-27
C1217	51 NPO 50V 5%	22-7621-27
C1219	5.6pF NPO 50V 10%	22-8033-04
C1222	2.2pF NPO 50V 10%	22-8034-21
C1226	24 N220 50V 5%	22-8030-01
C1240	180 NPO 50V 10%	22-8035-32
C1241	68 NPO 50V 5%	22-8035-32
C1426	120 N150 50V 5%	22-7631-35
C1453	8.2pF P030 50V 10%	22-7631-35

For SAFETY use only equivalent replacement part.

Items Not Listed Are Normally Available At Local Distributors.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
R1213	Phase Adjust	10K	63-10857-12	
R1231	AGC Delay	10K	63-10857-12	
R1244	Zero Carrier	10K	63-10857-12	
R1451	Volume Preset	5000	63-10857-36	
R1499	Volume	15K		
R2172	Vertical Height	2000	63-10857-08	
R2350	Tint		(3)	
R2350	Picture		(3)	
R2350	Black Level	Detent @ 50%	(3)	
R2351	Sharpness	Detent @ 50%	(2)	
R2351	Brightness Range		(2)	
R2351	Color		(2)	
R2390	Color Filter	10K	63-10857-12	
R3249A	Focus	20M	(1)	
B	Screen			
R5112	Blue Background	1500	63-10854-18	
R5113	Red Background	1500	63-10854-17	
R5114	Green Background	1500	63-10854-19	

For SAFETY use only equivalent replacement part.

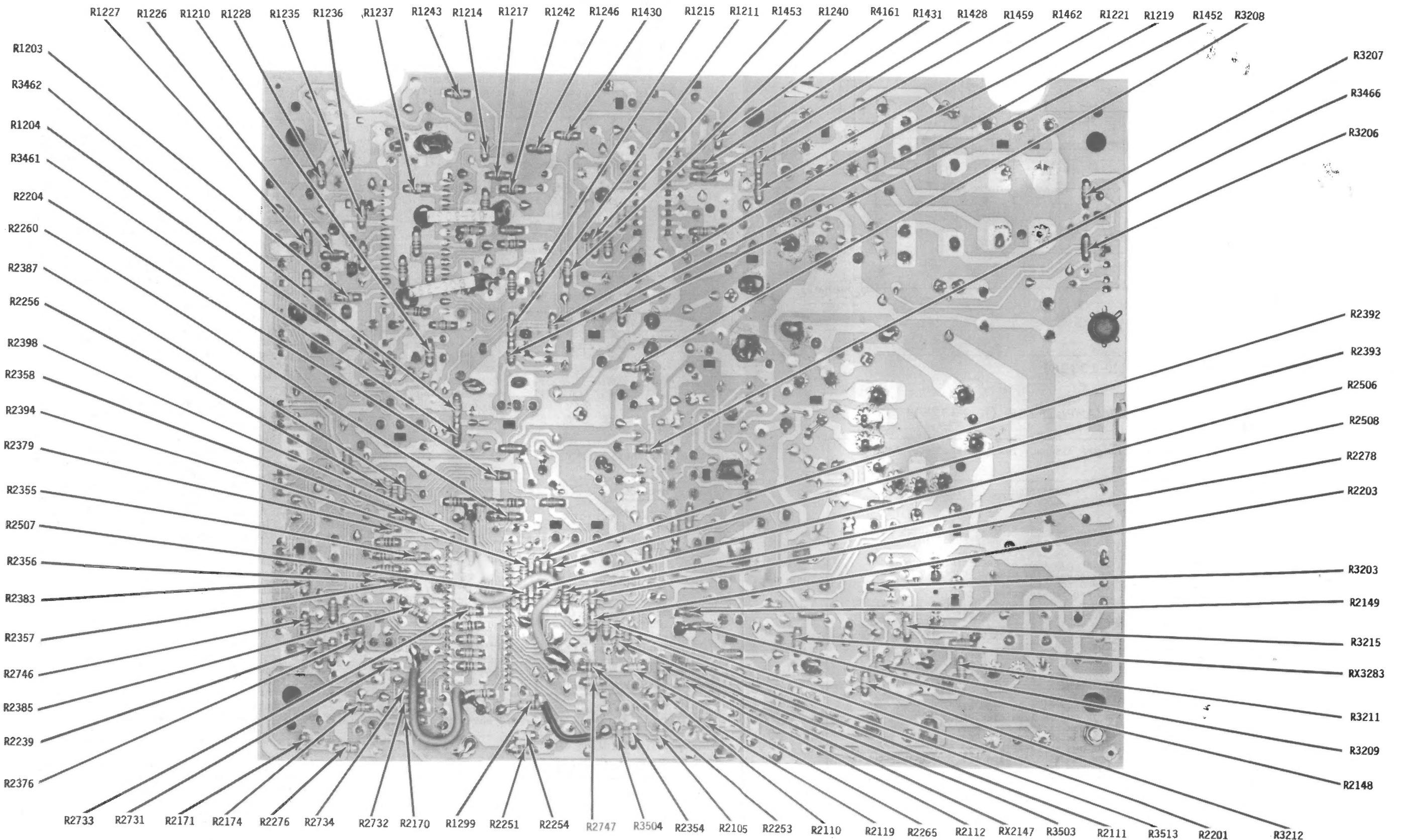
(1) R3249A and R3249B are part of Horizontal Output Transformer #TX3204, Part Number 95-3816-02.

(2) Control Assembly Part No. 63-11032.

(3) Control Assembly Part No. 63-11032-01.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	
R1455	82 5% 1/4W Carbon Film	63-10235-46	QW082	
R2745	11K 25 1/4W Carbon Film	63-10233-97	QW011	
R3216	1000 5% 3W Metal Film	3W210		
R3404	750 2% 1/4W Carbon Film	63-10233-69	QW175	
R3405	1500 2% 1/4W Carbon Film		QW215	
R5100	5100 2% 1/4W Carbon Film	63-10233-89	QW251	
R5101	5100 2% 1/4W Carbon Film	63-10233-89	QW251	
R5102	5100 2% 1/4W Carbon Film	63-10233-89	QW251	
R5103	390 2% 1/4W Carbon Film	63-10233-62	QW139	
R5104	360 2% 1/4W Carbon Film	63-10233-61	QW136	
R5105	390 2% 1/4W Carbon Film	63-10233-62	QW139	
R5109	680 2% 1/4W Carbon Film	63-10233-68</		



PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	
R5116	150K 2% 1/2W Carbon Film	63-10242-24	HW415	
R5117	150K 2% 1/2W Carbon Film	63-10242-24	HW415	
# RX1454	1 5% 1/2W Carbon Film	63-10243	HW1D0	
# RX1456	3.3 5% 1/2W Carbon Film	63-10565-12	HW3D3	
# RX1457	3.3 5% 1/2W Carbon Film	63-10565-12	HW3D3	
# RX1460	3.3 5% 1/2W Carbon Film	63-10565-12	HW3D3	
# RX2106	1 5% 1/2W Carbon Film	63-10243	HW1D0	
# RX2147	2.7 5% 1/4W Carbon Film		QW2D7	
# RX2704	1.8 5% 1/4W Carbon Film	63-11020-07	QW1D8	
# RX3200	1100 5% 1/2W Carbon Film	63-10243-73	HW211	
# RX3200	24 5% 5W WW			
# RX3201	10K 5% 1/2W Metal Film	63-10442-58	5W027	
# RX3205	130 5% 20W WW	63-10828-96	HW310	
# RX3208 (R3208)	62 5% 1/4W Tubular Leadless	63-11020-44		
# RX3214	3600 2% 1/4W Carbon Film		QW236	
# RX3217	3300 2% 1/4W Carbon Film	63-10233-84	QW233	
# RX3224	2700 5% 1W Metal Film		1W227	
# RX3225	2000 5% 1W Metal Film	63-10832-79	1W220	
# RX3226	15 5% 1/2W Carbon Film	63-10828-28 (1)	HW015	
# RX3227	390 5% 5W WW	63-10442-86	5W139	
# RX3228	300 5% 1/2W Carbon Film		HW130	
# RX3229	680 5% 1/2W Carbon Film	63-10243-68	HW168	
# RX3237	3.6 5% 2W WW	63-10420-37		
# RX3248	2 5% 7W WW	63-10449-31		
# RX3249	18K 5% 2W Metal Film	63-10837-02	2W318	
# RX3261	18 10% 10W WW	63-11037-01	10W018	
# RX3274	1.2M 20% 1/2W Carbon Film	63-10657-03 (1)	HW512	
# RX3283	510 5% 1/4W Tubular Leadless	63-11020-66		
# RX3297	13.3 Cold PTC	63-10710		
# RX3408	39 5% 3W WW	63-10428-62		
# RX3464	6.2 5% 5W WW	63-10442-43		
# RX3468	220 5% 1/2W Carbon Film	63-10565-56		
# RX3470	9100 5% 2W Metal Film	63-10836-95	HW122	
# RX3477	33 5% 5W WW	63-10442-60	2W291	
# RX3496	8200 5% 2W Metal Film	63-10836-94	5W033	
			2W282	

For SAFETY use only equivalent replacement part.
(1) May be found in some versions.

COILS (RF-IF)

ITEM No.	FUNCTION	MFGR. PART No.	ITEM No.	FUNCTION	MFGR. PART No.
L1203	Peaking (1uH)	20-3907	L2277	Peaking	20-3887-13
L1204	Video IF	20-3938-06	L2288	Peaking (22uH)	20-3907-16
L1209	Limiter	20-4172-11	L2376	Chroma	95-3080-01
L1210	AFT	20-4172-12	L3378	Peaking	20-3887-20
L1211	Peaking	20-4029	L5100	RF Choke	20-3887-26
L1226	RF Choke	20-3858-01	# LX1201	RF Choke	20-4216-01
L1230	Oscillator	20-4172-06	# LX2377	RF Choke (10uH)	20-3907-12
L1231	Peaking (12uH)	20-3907-13	# LX2379	RF Choke (10uH)	20-3907-12
L1232	RF Choke	20-4029	# TX3298	Line Choke	95-3868-01
L1426	Quadrature	20-3800		Line Choke	95-3868-02

For SAFETY use only equivalent replacement part.

COILS & TRANSFORMERS

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
# DY1	Yoke 90° Horiz 4.23mH Vert 24.2mH	95-3885	95-3885 (1)	
# TX3204	Horizontal Out	95-3816-02	A-14472-01 (1)	
# TX3205	Horizontal Driver	95-3848-01	873995-3848-01 (1)	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

COILS & TRANSFORMERS

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
TX1	Power	95-3650	95-3650 (1)	

For SAFETY use only equivalent replacement part.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFGR. PART No.	QUAM PART No.	
SP1401	3" PM 32 Ohms	49-1258-06	30A05Z32	

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
CR2356	Crystal	224-27	(3.58MHz)
E5100	Spark Gap	52-2240-06	
E5101	Spark Gap	52-2240-06	
E5102	Spark Gap	52-2240-06	
J1201	Phone Jack	A-9058-07	Bracket Assembly
L2276	Delay Line	20-4016	
L3201	Degaussing	A-11104-05	Coll Assembly
L3205	Degaussing	20-3884-31	Coll
L3210	Ferrite Bead	149-454	
P3201	Ferrite Bead	149-454	AC Line, Polarized
	Cord	A-9731-08	
		11-364 (1)	
# RX3226	Wire	91-2053	22 Gauge
U1201	Filter	224-26-01	Crystal
U1230	Trap	224-23	Ceramic
U1402	Filter	224-4	Ceramic
# Y1	CRT	A23JAN99X	
# EX3201	Spark Gap	38-102	4KV DC
# FX3299	Fuse	136-113-23	4 Amp @ 250VAC
	Antenna	A-14547-02	Assembly, UHF/VHF
	Antenna	1-142	UHF/VHF, Monopole
	Balun	A-9521-02	Assembly
	Convergence/Purity		
	Magnet	A-9667	Assembly
	CRT Socket	A-11056-08	Assembly, w/Connector
	CRT Socket	A-11056-17	Assembly, w/Connector
	Display	A-13924-01	Keyboard/Channel Assembly
		A-13924-02	Used In Models D0920A/D/K/U/S
	Display	39-56-01	Keyboard/Channel Assembly
	Earphone	78-2284	Used In Models SD0921A/S
	Earphone	A-13326	
	IR Detector/Amplifier	A-14565-01	On/Off, Assembly, Used In Models D0920A/D/K/U/S
	RC Network	A-14111-03	S/C, Used In Model SD0921A/S
	Switch	124-140-01	
	Transmitter		

For SAFETY use only equivalent replacement part.

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Cabinet, Front	14-11680-08 (1)	Cabinet, Bottom	14-11678-03 (10)
	14-11680-09 (2)		14-11678-04 (9)
	14-11680-10 (3)		14-11678-02 (5)
	14-11680-11 (4)		36-841-06 (10)
	14-11680-07 (5)		36-841-07 (2)
	14-11680-12 (6)		36-841-08 (3)
	14-11679-09 (10)		36-841-09 (4)
	14-11679-10 (2)		36-841-10 (11)
	14-11679-11 (3)		A-14115
	14-11679-12 (4)		
	14-11679-08 (5)		
	14-11679-13 (8)		
Cabinet, Back		Thumbwheel Knob, Five (5) used	